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OPPORTUNITIES
IN THE
COLONIES AND CUBA

BY

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CONTENTS

OPPORTUNITIES IN THE PHILIPPINES

PAGE
INTRODUCTION 3
CHAPTER I. The Civil Service 5
II. Forests and Timber 23
III. Gutta-percha and Rubber 35
IV. Shell and Pearl Fishing .... ~~45~~
V. Mineral Resources 58
VI. Manila Hemp 67
VII. Agriculture 78
VIII. Banking and Currency 94
IX. Transportation and Public Works 101
X. Professional and Technical Skill in Demand. 112

OPPORTUNITIES IN CUBA

INTRODUCTION 125
CHAPTER I. Cuba 131
II. Agriculture 146
III. The Mining Industry 189
IV. Commerce, Special Industries and the Professions 194
V. Public Works and Public Instruction 203
VI. Banks and Banking 210
VII. Manner and Cost of Living 215
VIII. Transportation Facilities 219
IX. Commercial and Trade-Mark Laws 229
X. The Isle of Pines 260
XI. American Enterprise in Cuba 268

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CONTENTS

OPPORTUNITIES IN PORTO RICO

PAGE
CHAPTER I. General Characteristics 275
II. Agricultural Possibilities 287
III. Industrial Development.................... 299
IV. Population 316
V. Social and Financial 328
VI. Government 351
VII. Chances for the Colonist 366

OPPORTUNITIES IN THE PHILIPPINES

INTRODUCTION

The importance of bringing to the knowledge of the American people as many facts as possible in respect to the situation in the Philippine Islands cannot be exaggerated. These facts may be gathered more satisfactorily from official sources than from any other, and I understand the object of this book is to give to the public, from such sources and from personal observation, knowledge of actual conditions in the Islands in concise, readable form without requiring the somewhat tedious work of reading long official accounts of government and conditions that must deal with every detail.

The amount of misinformation and the lack of any information at all in respect to the Philippines are the two things that impress and oppress one who has been engaged in the work of building up a government in the Islands and attempting to reform conditions so that the people may enjoy as large a measure of individual liberty and self-government as is consistent with the maintenance of law and order and their own material progress.

I hope, therefore, that this book and books of the same character may have a wide circulation so as to give accurate information as to the Philippines. The real reason for differences in accounts that come from the Islands is not so much in malicious attempts to misrepresent facts, as it is in the inferences which are drawn from facts actually witnessed and from local conditions that prevail in some one small section of the archipelago. If the fact is an exceptional circumstance, then the generalization that it typifies the whole situation is as gross an injustice as if the original fact were fiction. From the calm statement of facts officially presented, less mistakes of this sort are likely to be made.

Wm H Taft.

Civil Governor of the Philippines.

OPPORTUNITIES IN THE PHILIPPINES

By M. E. BEALL,
Division of Insular Affairs, Washington, D. C.

CHAPTER I

The Civil Service

THE INSTINCT to go west that has been operative among the people of America ever since the colonization of Jamestown and Plymouth, and which has carried the waves of population across the Connecticut, over the Alleghenies, up and down the Mississippi valley, into the fastnesses of the Rocky mountains and over their summits to Pacific tidewater, has not been extinguished.

The nation is still young, its youth is still daring, and the west still beckons onward. Oceans no longer separate, they unite, distant lands, and to-day Manila rather than San Francisco is the western city of the United States.

Much history has been made since Dewey's brilliant May-day victory, when, by the flash of his grim cannon, Spain read the handwriting on the wall telling her that her colonial policy had been weighed in the balance and found wanting. The soldier followed the sailor and the civilian has followed the soldier. The school book is taking the place of the cartridge as a civilizer, and ere long the right-of-way and the roadbed of new lines of transportation will replace insurgent breastworks, and blockhouses will be used as signal towers to direct the movements of peaceful traffic.

The Philippines is a large and virgin territory awaiting the magic touch of American push and enterprise, in order to become an important contributor to the world's wealth. The old customs employed in agriculture, transportation, manufacture and commerce must give way to those modern methods which have in a single century converted a large part of America from a wilderness, the range of savages, to one of the garden spots of the earth.

Nature has been lavish with her gifts in the Philippines. The climate is one of the best to be found in the tropics. The extremes of temperature are 60° and 97°, and the annual mean is 81°. Yellow fever, which in the past committed such ravages in Cuba, is unknown, but cholera and smallpox prevail to some extent among the natives, who are of course ignorant of the most rudimentary rules of hygiene. The health of the American troops when campaigning in the provinces was remarkably good, even better than when they were in camp at San Francisco. Modern medical science has robbed the tropics of their terrors, and it has been demonstrated that persons from temperate climes can keep their health and a good portion of their energy in a hot climate, providing they lead lives of temperance and observe simple rules of health.

The area of the Islands is estimated at 127,853 square miles, over twice the area of Illinois and more than three times the area of the state of Indiana, while the density of population, estimated at from 7,000,000 to 9,000,000, is nearly 50 percent greater than that of the states mentioned. The total area of the Philippines is about the same as that of Japan, but its civilized population is only about one-seventh as great, so that while the population is more dense than that of the United States, it is not to be compared with that of the chief oriental countries, while its fertility of soil and its abundance of natural resources are superior to those of almost every other land with which it can be compared. There is practically no limit to the development which may be wrought out under a just government wisely administered. Capital can scarcely be kept away when the conditions of government shall invite investment and the thorough pacification of the more remote parts permit of exploration. One enthusiast well acquainted with Philippine conditions, who is frequently consulted by capitalists, assures his clients that any enterprise except a sealskin-coat factory is bound to succeed in the Philippines.

The wise and economical government of these Islands, in view of their extent and population, will call for a large civil force of officers and employees. The general policy of the government in this regard is already outlined. It is the purpose to give positions to natives whenever and wherever they can be found possessing the necessary moral and intellectual qualifications, and civil employment is held out as a stimulus to encourage more general and thorough education. At present, however, and this must hold good for a long time to come, the majority of places of trust and responsibility will have to be filled by persons from the United States. Another rule has also been strictly adhered to in the appointments made to the Philippine service. Political influence has not been considered. It has been the aim of the Government, from the appointment of Judge William H. Taft as Civil Governor down to the humblest employee, to measure the men by merit rather than by politics. All parts of the country and all parties have contributed to the civil employees at present in the Philippines. Upon the organization of the present government many appointments without examination had to be made, but soon after its arrival in the Islands the United States Philippine Commission passed a Civil Service law making provision for almost every place under the government.

Civil positions in the Philippines under the present statutes are open to the citizens of the Islands and those of the United States who are over eighteen and under forty years of age.

There is a United States Civil Service Commission at Washington, D. C., to which application for examination for positions in the United States should be addressed, and there is also a Philippine Civil Service Board at Manila, P. I., to which applications for examination for positions in the Philippines should be directed. In view of the fact that many persons in the United States desire to be examined for the Philippine service, arrangements have been made with the United States Civil Service Commission by which the latter body will furnish the necessary information and will hold examinations for the Philippine Civil Service Board, and the successful candidates will be certified to the Philippine Board and thus become eligible to appointment. Transfers may also be made from the classified service in the United States to the classified service in the Philippines, although no provision is made for transfers from the classified service in the Philippines to the classified service in the United States.

Civil positions in the Military Division of the Philippines are not in the Philippine Civil Service, but are in the Civil Service of the United States and are, therefore, not subject to examination or classification by the Philippine Board. These positions include those under the Adjutant-General, Inspector-General, Chief Quartermaster, Chief Commissary, Chief Surgeon, Chief Paymaster, Engineer Officer, Ordnance Officer and Signal Officer.

The following schedules show the positions in the different branches of the service which will be filled through Civil Service examinations:

Schedule A.—All civil employees of whatever designation, whether compensated by a fixed salary or otherwise, whose duties are principally those of bookkeepers, bookbinders, clerks, chief clerks, draughtsmen, engineers (steam or mechanical), examiners, inspectors, interpreters, janitors, letter-carriers, machinists, messengers, printers, stenographers, typewriters, translators, or watchmen under the Military Governor, the United States Philippine Commission, the Treasurer of the Islands, the Auditor of the Islands, the Collector of Customs for the Islands, the Collector of Internal Revenue for the Islands, the Director of Posts for the Islands, the Civil Service Board, the Bureau of Forestry, the Bureau of Mines, the Bureau of Statistics, the General Superintendent of Public Instruction, the Wardens of Penitentiaries and Prisons, and the Provost Marshal General of Manila. The offices, positions and employments included in this schedule are classified, and vacancies therein, if not filled by promotion, transfer or reinstatement, shall be filled by competitive examination.

Schedule B.—Heads of departments and officers of the municipal service of Manila, and professional, technical and scientific positions, including all employees of whatever designation, whether compensated by a fixed salary or otherwise, whose duties are principally those of bacteriologists, cashiers, chemists, civil engineers, disbursing officers, foresters, physicians, practicantes, vaccinators and veterinarians. The offices and positions in this schedule are classified, and vacancies therein, if not filled by promotion, transfer or reinstatement, shall be filled by selections from certifications of eligibles secured by competitive or non-competitive examination, or otherwise, as the Board may determine to meet the needs of the service.

Schedule C.—Positions of skilled and unskilled laborers will be filled by appointment without examination according to the needs of the service, and those first applying will be first appointed after the Appointing Officer is satisfied as to their capacity for labor, their habits of industry, sobriety and honesty. No consideration whatever will be given to the political or religious opinions of the applicants, but those who are selected for employment must take the oath of allegiance before being assigned to work, and any skilled or unskilled laborer in the service found to be disloyal to the United States of America, as the supreme authority in those Islands will be immediately removed from service.

Schedule D.—The Treasurer of the Islands, the Auditor of the Islands, the Collector of Customs for the Islands, the Collector of Internal Revenue for the Islands, the Director of Posts for the Islands, the Head of the Bureau of Forestry, the Head of the

Bureau of Mines, the General Superintendent of Public Instruction, the Members of the Civil Service Board and the Chief Statistician are not at present subject to any form of examination, but provision is made in the Civil Service act for these offices to be filled after a short period from those in the ranks of the service who through merit and promotion will thus be enabled to reach these important positions.

Schedule E.—The Cashier of the Collector of Customs for the Islands, the Collector of Customs at Iloilo and the Collector of Customs at Cebu are not now subject to any form of examination, but provision is made to bring them within the scope of the Civil Service law.

Schedule F.—One private secretary for the Military Governor and for each member of the United States Philippine Commission, members of the police force and of the fire department of the city of Manila, guards at prisons and penitentiaries and school teachers of the Department of Public Instruction are not classified and therefore are not subject to any form of examination by the Civil Service Board.

At the date of the last report of the Civil Service Board 4606 positions in the Civil Service had been filled, with salaries ranging from $7500 down to $72 per annum. Of this number, 2044 were Americans and 2562 were Filipinos.

In these figures are not included the teachers at present employed in the public schools of the Islands, as they do not come under the control of the Civil Service Board, but look to the Superintendent of Public Instruction both for appointment and for assignment to their respective fields of labor.

On October 1, 1901, the date of the last report of the Superintendent of Public Instruction, 28 persons were employed in the Bureau of Public Instruction with salaries ranging from $2250 for the Chief Clerk down to $75 per annum for laborers. There were also under the direction of the department 724 American teachers, the Superintendent of the Manila schools receiving $3000 per annum, three Division Superintendents receiving $2500, two receiving $2250, and seven receiving $2000. The salaries of the teachers range from $1500 to $1000.

A normal school has been opened with an attendance of 250 students; teachers for the trade school are now ready to begin instruction and an agricultural school has been organized.

There are probably over 150,000 Filipino pupils enrolled in the free primary schools which have been established by the American Government and over 75,000 in actual attendance. There are probably 3000 to 4000 elementary Filipino teachers, and about 2000 of them are receiving one hour of English instruction daily. There are at least 10,000 adults receiving English instruction in the evening schools conducted by American teachers. Great interest is shown by Filipinos generally in educational matters and the eagerness for English instruction remains not only unabated but is rather on the increase; and when English is generally read and understood, the wealth of our literature will wield a potent influence in moulding public sentiment and aid in preparing the natives of the Islands for that larger measure of self-government that is both their wish and the desire of the United States.

The Forestry Bureau has found difficulty in securing the personnel needed in order to carry out its plans for protecting the forests and at the same time grant opportunity to cut the timber necessary to supply the demands of commerce. The Chief of the Bureau, Captain George P. Ahern, reports that it has been impossible to secure two foresters, four inspectors and eight first-class rangers, who are needed very much at the present time. Some technical knowledge is absolutely necessary, and as scientific forestry is a comparatively new study in the United States, the present plans of the United States Agricultural Department will possibly absorb all the trained foresters at present available. An effort to secure forestry officials from Java at a salary of $200 per month brought out the fact that expert foresters were paid from $310 to $610 per month and therefore $200 was no temptation to them to abandon their present positions. About the same rate is paid in India also, and this branch of practical science is not likely to become overcrowded for some time.

Private sources of information from Manila reveal the fact that while clerical positions are somewhat better paid than similar positions in the government service in the United States, yet it is hard for the Insular government to retain its employees, as business houses and private corporations offer better salaries for competent clerks, stenographers and typewriters than is paid by the government.

The cost of living in Manila has increased very much since the American occupation and is higher than in cities of like size in the United States, yet there are some compensating advantages. It is the opinion of the officials there that the present abnormal conditions will correct themselves when the city becomes adjusted to the new state of affairs. The Islands are at present in a state of transition. They are off with the old order, but have not yet become accustomed to the new. Those who go to the Philippines should lay in a good stock of patience and good humor, and determine to make the best of things as they find them. Habits change slowly, and the few Americans there, forceful as they may be, cannot hope to bring six or seven millions of people to their ways, even though they should be better ways than the old to which the natives cling with such persistence. It will also occur oftentimes that many things, which upon first acquaintance seem incongruous and ill advised, will be found upon investigation and experience to be based upon climatic or other conditions which fully justify their existence.

A Civil Service appointee who reached Manila in November, 1901, in writing to a friend described her first impressions of Manila as follows:

"At 9.30 next morning we went ashore to begin the new life—no more day dreams on deck, but the stern reality. Pen cannot describe nor brush paint the sights in Manila bay or the dirty Pasig, with its odd cascos, bancos, launches and all manner of sailing craft; the old Spanish fort, where many prisoners were put in cells underground and forgotten at high tide, in the days when Spanish sovereignty reigned supreme; the natives (decidedly decollete from the head down and feet up), and on the Escolta the carromatas, quilis and dear little ponies, caraboas and carts, and the Spanish houses, which all look alike to me, whether store or dwelling, except that in dwellings the first floor is used for the horses, chickens and dogs, were intensely interesting.

"My 'bunkie' and I took a room together temporarily. I say temporarily advisedly, as I paid only $7 per day.

"Did you ever sleep in a Filipino sleeping machine? No! Well you don't want to. After seven nights in a sleeping-car berth, and twenty days and twenty-four nights in a bunk on the good ship

'Hancock,' I anticipated much comfort and rest in a bed when I got ashore, but my hopes were dashed at the first sight of the room, which contained besides a washstand, two straight-backed chairs, a small table, and a wardrobe so musty you would not dare to hang anything in it, a nondescript piece of furniture—it is called a Filipino sleeping machine, but the best description I can give of it is to say it looks like a hearse, minus the glass sides, wheels and horses, but covered with a thick screen, through which no air passes, but behind which you must sleep (?) or make an effort to, else you will be literally eaten up by mosquitoes. The bottom of the hearse—I mean bed—is made of cane, the same as is used for chair bottoms in the States, over this is a sheet, only one, and over that a counterpain (you may spell that pane in the States, but I prefer the pain here); the head of the corp—person who desires to sleep (notice I say 'desires')—rests upon a very hard pillow made of chicken feathers, and frequently very musty.

"We were warned to keep our nets tucked in very closely, as a cockroach, which is about eight inches long, is quite common and is said to eat off your toes while you sleep, unless this precaution is taken. I have preserved my toes so far, but have seen the cockroaches, likewise lizards, which slide over your walls at night and sing you to rest. The lizards are perfectly harmless, and I'm told that in time you learn to love them and carry them around with you as pets, but at present writing I have not reached that point.

"To go back to our first night: in the wee small hours of the morning while I was moaning and groaning in a half-doze, vainly trying to find a soft spot, I was more fully aroused by the strains of 'America' wafted on the silent air from an American club close by. There they were enjoying a hop, regardless of the fact that it was between four and five o'clock Sunday morning. In a moment my room-mate said 'Miss ——, are you awake?' I acknowledged that I was. 'Do you hear what that band is playing?' she continued. Again I replied in the affirmative. A moment's silence ensued, and then in a voice choked with sobs, she added, 'Don't you feel like crying?'

"I moved to Hotel Delmonico, Walled City—name sounds well, but don't allow it to deceive you. What's in a name? Echo answers $120 (Mexican) per month for this one. The stories told in the States of the food here are quite untrue. This hotel is Spanish, and the meals, while served in courses by a muchacho, and very unlike American cooking, are thoroughly palatable, and since coming ashore I have a voracious appetite and have no difficulty in finding enough to appease it. Rice is seldom served, and the soldier who wrote that the chief article of food in the Philippines was 'boiled rice, stewed rice, baked rice, fried rice and rice' was poorly informed if he referred to Manila. I give below the menu for a dinner:

Oyster Soup.
Salad.
Boiled Shrimp, Pork a'la Spagnole,
Mutton a'la Cutlet Milanesa, Stewed Kidney,
Ham, with Tomatoes, Beef a'la Mode, Roast Beef,
Roast Potatoes, Cabbage, Spinach,
Tomatoes.
Cheese, Ice Cream, Fruits,
Coffee, Tea.

"As to climate, I can say little. We arrived after the rainy season (so we were told). However, for your information I will say that it has rained steadily for eight days, and still rains. If you think you ever saw it rain in the United States you should undeceive yourself at once. What you call rain is simply a falling mist—it only rains in the Philippines. Not only does it rain outside, but I came home the other day to find a miniature Niagara Falls on my walls—just gathering dampness you know. Our trunks are covered with mold and so are our shoes, but that's expected, at least in the Walled City.

"As soon as I have the time and money, I'm going to look up a place in Ermita to board. Ermita is on the bay and is beautiful and healthful. But living there necessitates the purchase of a pony, a carromata or quilis, and the employment of a cochero. I'm told that when I get all of these things, my troubles will have just begun. The carromata may be all right, but the pony and the cochero are not to be depended upon. Some of the ponies are beautiful little animals and look as docile and lamblike as kittens, but wait until you start out with one and the chances are ten to one that he will balk every two blocks, or oftener if you try to turn him round, and that it will take all the cocheros and policemen in sight to induce him to cross the Bridge of Spain. The cochero—well, I'll write of his qualifications later."

This quotation is given, not because the statements are above criticism in every particular, but they are the first vivid impressions of an intelligent and cultured lady on landing at Manila. More intimate acquaintance may change or modify these first impressions, but with all it makes an intensely interesting picture of life in the Orient, which will indeed attract rather than repel those who may be thinking of making their future home in those distant possessions.

When appointments are made in the United States to positions in the Philippine Civil Service, the government of the Philippine Islands, as a rule, furnishes transportation from the home of the appointee to the port of embarkation, and thence on a government transport to Manila. The appointee will be required to pay $1.50 per day for subsistence while on the transport, and this amount may or may not be returned to him according to the arrangements previously made with reference thereto. Transportation is also provided in some instances for the immediate family of the appointee. All these details can and should be arranged and clearly understood before departure, and the government will cheerfully give explicit directions how to proceed in every individual instance.

The number of positions and the amount of work to be performed in the Philippines will constantly increase. Only the framework of the government has been erected at present and with the complete establishment of peace every department will grow and will require a larger force to handle the increasing volume of business. An illustration of this situation is afforded by the fact that each of the provinces under civil government has a supervisor who must be an engineer and who will have charge of the roads and road-building as well as of other internal improvements, and the amount of work is so large that it will be impossible for one man to direct it and manage the force that will be employed thereon. The quota of teachers is not yet filled, and there will be calls for others from the States, as well as for specialists in the various lines of educational work.

Arrangements are being made in some American colleges and universities to give a course of special instruction in order to prepare students for positions in the Philippines, and attention will be given to the history, customs, languages and needs of these new lands, and a study made of the British Civil Service in India which has given such satisfactory results in the government of that vast empire.

As the official language of the Philippines, Porto Rico, and Cuba has been Spanish, and all records and laws are in that language, and as it is the common language of commerce, those who wish to qualify for positions and advancement in the Insular Civil Service would do well to acquaint themselves with Spanish. It has the advantage of being a language easily acquired, and a few months' faithful study, added to actual contact with the people who speak the tongue will enable any student to acquire a good working knowledge thereof. Even in its home departments the United States Government now requires a number of Spanish-speaking clerks and interpreters, and the demand is likely to increase rather than diminish. The time has arrived when Spanish should be given an important place among the modern languages taught in the schools, and time devoted thereto will not be lost.

CHAPTER II

FORESTS AND TIMBER

THE MOST patent and striking element of wealth in the Philippines consists of its forests. The Islands are all mountainous, some of the high peaks having an altitude of nearly 9000 feet. In many of the islands the steep mountain slopes begin close to the seacoast, and to the casual observer the entire area seems to be woodland. It has been estimated, and estimates have not yet given way to actual surveys, that of the 73,000,000 acres in the islands, only about 6,000,000 are under cultivation.[1]

The official geographical statistics of 1876 fix the forest area at 51,537,243 acres.

Fernando Castro estimated the forest area in 1890 at 48,112,920 acres. This includes all woodland, private as well as public.

As one travels over the Islands he is constantly struck with the large population to the square mile and the scarcity of timber close to the main traveled routes and centers of population. As one leaves these main lines of communication vast virgin forests are met with, rich in valuable hard woods, dyewoods, gums and other products, waiting for the skill and enterprise of the American capitalist. On the Island of Cebu, where there is a population of 290 to the square mile, not a merchantable stick of timber is evident, with the exception of a small tract of forest in the northern end of the Island, which it is now the purpose to preserve with care.

---

[1] Jordana, 1890.

The Island of Panay, with a population of 150 to the square mile, is almost denuded of good timber. In Luzon, where the population averages seventy-eight to the square mile, no timber is found in the vicinity of the centers of population. In travelling over the line of railway from Manila to Dagupan, a distance of 120 miles, not a single merchantable stick of timber can be seen within several miles of the road. Büt there are tracts in various parts of Luzon where much valuable timber remains. In the northern end of the island, in Cagayan and Isabela provinces, which by the way are the best tobacco districts of the archipelago, there are at least two million acres of valuable forest remaining. The entire east coast of Luzon, from the northern end as far south as Atimonan, comprising several million acres, is practically a virgin forest. In northwestern Luzon very little merchantable timber is left, with the exception of the slopes above 3000 feet, where flourishes a species of pine, *Pinus insularis*, all ages mingling together. The maximum size of the trees is close to four feet in diameter and more than one hundred feet in height. In this region the trees attain a diameter of twelve inches in about twenty years. Almost every acre of these northwestern mountains is burnt over each year by the savages, but the larger pines seem to survive these repeated scorchings. Through central Luzon the timber has been cut away, leaving small tracts of fairly good forest in a few places. In southern Luzon, in Tayabas and the Camarines, are found some large tracts fairly well covered with a variety of valuable tree species.

Upon entering the southwestern islands, extending from Mindoro through to Paragua, a region is encountered that has been travelled but little, and where the population is sparse. This territory is largely covered with virgin forests, almost untouched by the hand of man.

In this group of islands are found more than 4,000,000 acres of virgin forest extending from the water's edge to the summits of the mountains. The general lay of the land will aid in getting the timber from the forests to tidewater, where it can be transported to the markets of Manila, or to vessels which will carry it to other lands. Some cutting has been done in this region, but it amounts to a mere thinning of the edges of the forests. This group of islands is celebrated for the great quantity of narra, or Philippine mahogany, molave, ipil, and calantas, Philippine cedar.

The forests here are composed of valuable hard woods, four or five feet in diameter, with magnificent clear trunks extending upward for eighty feet to the first limb. As a rule it is found that all over the islands the largest trees have not been felled, owing to the lack of facilities for handling heavy timbers. Very little cleared land is found in Mindoro. The reputation as a death trap for white men, which it has held in the past, will change when a few hundred square miles have been cleared of timber and devoted to agriculture. A vigorous thinning of at least fifty percent of the present forest growth of Mindoro and Paragua would make them much more salubrious than at present.

The island of Mindanao, with an area of more than 23,000,000 acres, is almost entirely covered with forest. This large island has three water or river systems which drain large tracts of territory and will afford easy means of egress for the timber of the interior parts of the island. The major part of the population of this island is to be found in the coast towns, with the exception of the region in the north surrounding the lake of Lanao, where there is a large population of Moros.

Very little timber has been cut in this island owing to the scarcity of labor and the distance from market. It is safe to estimate at least 10,000,000 acres of virgin forest for this island alone. The southern part of Mindanao, the region southeast of Cotabato, is noted for its gutta-percha, rubber and other gums.

More than $300,000 was paid in the year 1890 at Cotabato for these gums alone, all of the product being shipped to Singapore.

Of the other larger islands it may be said that valuable forests are found in the islands of Leyte and Samar. The island of Negros has been cut over rather thoroughly for a great many years, and it will not be long before it will be in the same condition as the island of Cebu, if the forests are not protected.

The Forestry Bureau of the Philippine Islands says in its official report: "We may safely estimate that there are at least 20,000,000 acres of virgin forest in these Islands, with an average of at least 15,000 feet board measure of valuable hard wood to the acre. This would make the quantity of valuable timber awaiting utilization amount to the almost inconceivable quantity of 300,000,000,000 feet board measure, an amount which the mind refuses to grasp, and represents an amount of wealth and a source for the investment of capital that cannot be exhausted for many generations.

Up to the present date the Forestry Bureau, with its limited personnel and being yet new to the work committed to its charge, has listed 665 native tree species. Several hundred of these are but little known save by name, and there is no English equivalent that would give any idea of what they are like. During the past year about 160 different species of native woods have entered the market, the most valuable of which for construction purposes is molave. Molave, ipil, yacal, and dungon are remarkable for their durability and strength. The qualities of a very few of these woods are very well known to the natives, and the specifications for the main timbers in house construction carefully provide that the timbers used shall be some of those above mentioned. In addition to their value in ordinary construction, they have exceptional qualities when used as paving blocks. Two of the bridges in Manila were paved with molave blocks about seven years ago and have been subjected to the heaviest traffic in the city, and apparently at the present date, not a single block has been crushed or splintered, a record made by no paving block employed in the United States.

The calantas, or Philippine cedar, is almost entirely used in making cigar boxes. Narra, tindalo, acle, and luan are used principally as furniture woods. Betis, aranga, and dungon are generally used for piling, for which there is a great demand in the Manila market. The other important construction woods are baticulin, batitinan, amuguis, guijo, apitong, apanao, sacat, balacat, malabulac, and malasantol.

The Pullman Palace Car Company, at no little expense, imported from the Philippines forty-eight logs as an experiment, and it is their testimony that they were the best tropical hard woods that had ever entered their works, and their industry has called for the finest woods from all parts of the world. It is only a question of time when the lumber business of the Philippines will be one of the leading industries of the Islands, giving employment to capital, calling for intelligent labor and superintendence, and contributing to the wealth both of the Islands and of the United States.

Up to the present time it has been impossible to cut enough timber for the actual necessities of the Islands, and much lumber has been imported from the United States in order to enable the government to build barracks and quarters for the troops now in the Philippines, as well as for private consumption. The amount of timber used per capita is less than one percent of the corresponding amount used in the United States, notwithstanding the fact that rents are abnormally high in Manila and the supply of houses does not begin to equal the demand. There is at present a call for millions of feet of lumber, lumber which is now rotting in the forests, but which cannot be carried to market. The total amount used, including importations is much less than the annual forest growth of the single province of Cagayan in northern Luzon.

Engineers and builders in Hongkong, Singapore and other ports in the Orient prefer the timber of the Philippines to that of other islands of the East Indies, but have lately been unable to secure cargoes owing to the scarcity of the supply on the market and the great local demand.

The Philippine government has divided the timber of the Islands into six different grades or groups and charge a fixed tax per cubic foot for all timber taken from the public forests. This tax is as follows:

	Cts. per cu. ft.
Superior group	14
First group	10
Second group	8
Third group	3
Fourth group	2
Fifth group	1

Serious objections have been made to these prices as being too high, much higher than is charged by other governments who place a tax upon their forest products and with whom the Philippines will have to compete, and efforts are being made to have these rates made much lower.

A company that is planning to put in thirty-seven miles of street railway in Manila claims that it can import ties from Australia cheaper than it can cut and place them in Manila. It alleges that the timber tax on ties would amount to about fifty-five cents each, to which would have to be added the cost of cutting and transportation, while they can be laid down in Manila from Australia at a cost of seventy-five cents apiece. It is also asserted that the Manila and Dagupan Railway imported its ties from

Australia simply from motives of economy. These facts would seem to indicate either that the tax is high or that there should be some change in the classification.

Many applications are now pending for the privilege of cutting timber in the forests of the Philippines, and one company desires, should permission be granted, to construct some twenty miles of narrow gauge railway into a heavy timber region, erect sawmills and get out timber for the market that is calling for so much more lumber than can at present be furnished.

The difficulties attending the development of a lumber industry on a large scale are neither few nor trivial. To begin with there are no roads into the best forest tracts, and road-building in a region of torrential tropical rains is no light undertaking. The rivers also are full of snags and other impediments to their use as driveways, while the question of the health of laborers must also be considered. Many of the most valuable woods will not float, thus necessitating the use of bamboo rafts, or placing alternate logs of light specific gravity between the heavy logs, and this operation entails additional expense. On the logging roads, even after they are constructed, the only animal available for transportation is the acarbao, an animal of but moderate strength, which readily succumbs to overwork or disease, and which during the past few years has suffered severely from the plague of the rinderpest, which has decimated the supply of the islands. There are no appliances in the islands suitable for handling large and heavy logs, and even if such means should be introduced, as they undoubtedly will be, skilled white labor must be employed until natives are properly trained to their use, and the natives have not as yet shown any special mechanical ingenuity.

The greater part of the natives, especially those living near large forest tracts, seem disinclined to constant heavy labor and cannot be depended on to remain any length of time at their work. It is the testimony of the United States Philippine Commission that such labor as can be secured is irregular, poor, and much more expensive for the work done than in the United States. How much of this difficulty is due to unsettled conditions and how much is inherent in the race cannot be decided, but with the pacification of the provinces labor will become easier to secure and better in quality, though it will long be unsatisfactory when measured by American standards. Throughout the Archipelago wages have doubled, and in many cases trebled, since 1898. In too many instances the immediate result of doubling the wage has been to induce the laborer to work just half as many days.

The wise regulations adopted for the preservation of the forests will be an impediment to their cutting in the manner that has obtained hitherto in the

United States. The forestry officials are strictly charged to supervise the work of the logger and to see that only the proper trees are felled. No tree can be cut down without the permission of the supervisor, and then the timber must be hauled through the forests with the least possible damage to the younger growth. The forestry regulations also provide that the felling of any tree species of the superior or first group of less diameter than 40 centimeters (15¾ inches) is absolutely prohibited. When the trees are felled and piled, notice must be sent to the nearest forestry official, whose duty it is to measure, appraise, and see that the government valuation is paid on the timber before it is removed. When this timber reaches the market it is again inspected by an official who carefully revises the classification of the first official, measuring each log a second time and sees to it that the government is paid its full value for its timber.

The Forestry Bureau has calculated that when American appliances and skill are at work in the forests, cargoes of the more valuable woods can be placed on board ship for not more than $1, Mexican (fifty cents gold), per cubic foot. Transportation to the United States costs at present from $9 to $15, gold, per thousand feet, board measure. Almost any length can be obtained and diameters up to five and six feet.

During the period of Spanish control the largest and finest trees were left untouched, because there were no appliances with which to handle them after felling. Occasionally a tree six or seven feet in diameter would be felled and a single slab taken from it, from which to make a table. Many of these fine table tops can be now seen in different parts of the islands, some of them more than seven feet in diameter.

While many of the varieties of timber are now known to be valuable, and already have an assured place in the timber markets of the world, there are others that are yet new, the beauty, durability and facility for working up into furniture of which must yet be demonstrated, but there can be no question as to the wealth, quality and supply of the great forest areas which lie open to investigation.

The whole timber problem of the Philippines is an attractive one for the active American, whose field of operation in many parts of the United States has become limited by the fact that so much of the territory has been cut over, and when government restrictions and the exigencies of the new industry become adjusted in a proper manner, portable railways, driveways, machinery for handling heavy timbers, sawmills for preparing lumber for market, and even mills for working up this lumber into convenient and useful forms will become an important industry and contribute not only to the revenues of the Islands but to their development and civilization.

CHAPTER III

GUTTA-PERCHA AND RUBBER

BOTH gutta-percha and rubber are the products of certain tropical trees and vines. They issue from a cut in the bark of the plant in the form of milk or latex, which hardens or coagulates on standing or through the effect of heat and certain chemicals. There are three physical distinctions between gutta-percha and rubber, viz.:

Gutta-percha is tough, horn-like and non-elastic; rubber is soft and very elastic.

Under the influence of moderate heat, gutta-percha becomes soft and plastic, like putty, and can be moulded into any desired shape, retaining that shape when cold; rubber is unaffected by the same heat.

Under the influence of water, rubber changes slowly and decomposes, loosing its elastic and waterproof qualities; gutta-percha on the other hand remains practically unchanged in water, for how many years no one knows.

The chief uses for rubber are for hose, tubing, pneumatic tires, waterproof attire, toys, and other similar articles. Almost the sole use of gutta-percha is the insulation of electric submarine and land cables.

The home of the rubber trees and vines is in every fertile and tropical land. The number of species of both trees and vines is very great. Most of the important species are known scientifically and new kinds are being discovered every year, as each country possesses trees peculiar to itself. South America produces the best rubber; the second quality is probably from India, the Malay Peninsula and the adjacent islands, though Mexico and Central America come close to those last mentioned. Africa, with her unknown number of tree species and vines, promises to become one of the heaviest rubber-producing countries of the future.

Gutta-percha, so far as known at the present, is absolutely limited to the Malay Peninsula, Borneo and Sumatra and the small islands lying between. Neither Java, Celebes nor the Moluccas, which are near by, have any native gutta-percha trees. The question as to whether the Philippines is within the gutta-percha zone is a disputed one, and in planning for the future of this industry the fact of its limited area and the few tree species which afford the gum, should be taken into consideration. With the increased demand and the high price paid for gutta-percha, different kinds of trees have been found which give the valued gum, but collectors, dealers and botanists all agree that the principal source of supply lies almost exclusively in one kind of tree.

The wild natives of the Malay Peninsula, Borneo and Sumatra have been in the past, and still are, the gutta-percha collectors. When a tree is found, deep in the tropical forest, far from the traveled road, it is cut down, the limbs chopped off, and the bark of the entire trunk is ringed from end to end. The gutta-percha milk exudes and rapidly hardens, and it is then pulled off and thrown into a basket, and the collector passes on to find another tree which he treats in the same manner. When a sufficient amount of the gum has been collected the native returns to his camp and casts the collected gum into hot water, and when the gutta-percha becomes plastic, it is worked up into balls, with the bark, dirt, stones and used-up hatchets, worked into the inside as much as possible. It is then taken to the nearest waterway, where it is stored until a Chinese trader passes and is then eagerly exchanged for cheap clothes, cutlery, jewelry, tobacco, liquor and other civilizing objects of trade.[1]

The Chinese traders land the gum at some seaport town where the Chinese merchants usually soften it up and adulterate the best grades with cheaper ones, and then it goes to Singapore for another mixing, adulterating, or cleaning at the hands of Singapore Chinese, who work it into the various grades recognized and bought by foreign exporters. The end of its journey is in Europe or America at the cable factories. Rumors of new cable lines affect the market and raise the price of the gum at Singapore, and the rumors of successful experiments with wireless telegraphy tend to depress the market, making an interesting illustration of how the occupation of the savage forest wanderers of the Far East is affected by the latest commercial developments and the most recent achievements in science.

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[1] Dr. V. Ramburgh relates that away up in the center of Borneo he met a Chinaman doing a thriving business in gutta-percha, giving the native savages condensed milk in exchange therefor.

The natives from their careless methods secure on an average about one pound of gum from each tree, while Uray by experimenting on a large tree found in the forest, and after analyzing the bark and leaves estimated that there were at least twenty-five pounds in the entire tree.

The present condition of the gutta-percha supply is far from satisfactory. In 1843, when first discovered, the tree was abundant on Singapore Island and the Malay Peninsula, but by 1857 the large trees had all disappeared. Then the trees of Borneo and Sumatra shared the same fate, and at present all the gutta-percha comes from the almost unknown and unexplored regions of central Borneo, Sumatra and the Malay Peninsula.

The annual output has increased but little within the past five years, when the high price enticed more native gatherers into the forests. But the demand has been so out of proportion to the supply that the

Chinese have had to resort more and more to adulteration. Consequently, of the cheaper grades there seems to be a sufficient supply on hand, but of the best variety there is not more than a ton all told, with a demand for 600 or 700 tons. Of the twenty-five different varieties, the following table gives the principal ones, with their approximate amount of gutta and their prices for September, 1901, as given by Low How Kim and Company, one of the largest gutta-percha dealers in Singapore:

Kind.	Variety.	Per ct. of gutta according to Obach.[1]	Price per picul[2] in 1901.	Highest price in 1891.
"Reds."	Pahang.	78	$260	$85
	Bolongon.	69	225	..
Seundek.	Bagan.	57	210	70
	Serapong.	56	180	60
	Sarawak.	..	85	..
White.	Treganor.	52	85	..
	Pahang.	..	90	..
	Penang.	..	87	..
	Jambul.	49	..	..
Mixed reds.	Sarawak 1.	61	110	..
	Sarawak 2.	56	90	..
	Sarawak 3.	52	70	..
	Sarawak 4.	..	40	..
Reboiled.	Padang.	50	..	..
	Penang.	..	90	..
	Siak.	..	11	..

From the figures compiled by the statistical department of Singapore, the amount of gutta-percha exported from there for the last fifty years is probably 300,000,000 pounds. This · is interesting as giving a clew to the number of trees destroyed during that time, even allowing two pounds to a tree, while the amount wasted by the present method might also be calculated at ten times 3,000,000.

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[1] As the percentage of gutta in a sample of pure gutta-percha from the species Dichopsis gutta is generally 85 to 90, it is certain that even the best commercial variety is far from being pure.

[2] A picul is equal to 133 pounds.

In Singapore the Philippines are credited with having produced 232½ piculs (40,592½ pounds) of gutta for the first half of 1901, though the facilities for tracing the true origin of the gum are not very satisfactory.

Extensive experiments are being made looking to the cultivation of the tree, and there are now experimental nurseries at Singapore, Malacca, Penang and at Buitenzorg, all under government protection. Two private Dutch companies have also started gutta-percha plantations and have factories for the extraction of the gum from the leaves of the trees, while the French government is experimenting with a submarine cable insulated with gutta-percha extracted from leaves, and though the cable has been in the water for four years, the reports continue to be satisfactory.

While it is conceded that the Jolo Archipelago, the southwestern part of the Philippines, supplies a small amount of gutta-percha, the future industry in this valuable gum will depend on plantings, which in other parts may be said to have passed the experimental stage, and unless the demand should cease, the Moros in that far outpost of the Oriental possessions of the United States will contribute to the world's supply of insulating material for submarine cables, a material which will be in great demand when this government is prepared to lay a Pacific cable.

It is an industry of which but little can be said at the present time, and its profitable development as a civilized industry is simply one of the future possibilities of the Philippines.

Rubber, unlike gutta-percha, is produced in many countries, and is derived from so many different species of trees and vines that at present it is not so much a question of saving the industry from extinction, as is the case with gutta-percha, but rather one of, first, finding the best kinds; second, working out the best methods of collecting and preserving it; and third, cultivating the trees or vines on a large scale when the conditions of the market warrant, and making said cultivation a profitable one.

A few of the principal kinds of rubber are here given to show the wide distribution of this valuable gum.

Commercial Name.	Country.	Source.	Botanical Name.
Para.	Brazil.	Tree	Hevea brasiliensis.
Ceara Scraps.	do	do	Manihot glazocou.
Peru Caucho.	Peru	do	Hevea and others.
Guayaquil.	Ecuador and Colombia	do	Castiloa elastica.
Mexican Scraps.	Mexico and Central America.	do	do
Senegal Balls.	Sudan.	do	Vahea, Landolphia, and Ficus.
Sierra Leone Niggers.	West Africa.	do	do
Gaboon Balls.	French Kongo.	do	Landolphia.
Mozambique Balls.	German East Africa.	do	......
Madagascar Pinky.	......	......	......
Assam.	Bengal.	Tree and Vine.	Ficus Urceola.
Penang.	Sumatra.	Tree.	Ficus.
Ceylon.	Ceylon.	do	Manihot glazowu (cultivated).
Borneo.	Borneo.	Vine.	Willinghbwia, Urceola, Chinomorpha.
New Caledonia.	Australia.	Tree.	Ficus, artocarpus, etc.

In rubber investigations the explorer and the botanist have been richly rewarded. Each year adds to the list as new countries are explored, developed and contribute their quota to the ever-flowing commerce of this busy world. The demand for rubber is constantly increasing, and there is nothing at present in sight that can take its place, nor is it likely that any invention will make it useless.

As already stated, the rubber exudes from a wound in the bark of the rubber tree or vine in the form of milk. Two problems confront the collector—the best method of extracting the milk from the tree, and the treatment that should be given to the milk in order to secure the best possible results.

Most of the native rubber collectors, more civilized as a rule than the gutta-percha collectors, have sense enough not to cut down the tree and ring the bark, yet many, through carelessness and ignorance, are so clumsy in the manner of tapping the bark that they often make large cuts into the wood and the tree is left a prey to insects and borers, which in time cause the death of the tree. Large rubber tracts in the great valley of the Amazon and in Central America have suffered in this manner, so that the present supply of the best gum is brought from the more remote districts of the interior.

In the East Indies no effort is made to save the trees and vines, the latter especially are doomed to early destruction, for the custom is to tear the vine away from its supporting tree, cut it into short lengths, and suspend the pieces over a receptacle into which the milk exudes. Heat is sometimes applied to one end of the piece in order to drive the milk out at the other end. This is the method in vogue at present in the Philippines where the rubber vine is known to exist.

Scientific experiments have been made in Ceylon, Penang, Singapore and Java which show that every variety of rubber tree and vine can be tapped so as to get a large percent of the rubber actually in the plant without doing any apparent harm. An incision is made in the bark so that the greatest number of milk ducts will be cut, while no cutting or injury of the inner wood takes place. When the tapping is properly done, the wound quickly heals, no borers or insects attack the tree and the milk supply commences at once to reform.

So much has been done in the way of rubber cultivation in India, the Malay Peninsula and Java, where conditions obtain very similar to those which obtain in the Philippines, that the industry has passed the experimental stage. The first good harvest can only be expected after six years, although efforts have been made to secure earlier returns. There are some who advocate the planting and cutting down of the small trees every year and extracting all the milk they produce. Others question the practicability of this process. After the trees commence to give milk from tapping, the planters estimate a return of from $150 to $200 per acre from the rubber crop, even at the prices at present quoted.

The rubber trees (Ficus) which have been planted in many of the Philippine Islands have grown luxuriously, and a Ceara tree planted a year ago in Manila is now twenty-one feet high. Giant rubber vines in the Philippines give an inferior rubber, but yield large amounts.

The Forestry Bureau of the Philippines is fully alive to the importance and value of both gutta-percha and rubber and is making explorations, investigations and experiments along these lines, as well as observing with care the results thus far obtained in the adjacent territory both by the English and Dutch governments, and it is safe to assume that the time is not far distant when these forest products will contribute an important sum to the exports of the Philippines. Of course it is a well-understood fact in economics that whatever be the developments in one industry it contributes to the development of others, and in looking over the Philippines it should be remembered that all these openings mutually react upon each other, and their effects will be cumulative, inviting immigration, creating a demand for labor, stimulating new wants among the natives, and thus enriching and enlightening the native population, as well as rendering good returns to those who intelligently devote themselves to the building up of business.

CHAPTER IV

SHELL AND PEARL FISHING

THE NEW possessions of the United States in the Orient reach down to within five degrees of the equator, where, scattered over a tropic sea, as though sown from the hand of a creative giant is found the Jolo Archipelago, extending through some two degrees of longitude and one and a half degrees of latitude, with a general trend of northeast and southwest. Here is a point where extremes meet. Free Americans find slavery recognized as a part of the social system. The missionaries of the latest Protestant faith find followers of the false prophet making treaties in the sacred language of the Koran, and American school teachers gather their pupils from the harems of sultans and dattos.

Nature is prodigal of her gifts in the tropics and in far-off Jolo not only does the soil produce food for man but the sea teems with life and the shallow waters give rich treasures to the fisherman.

The pearl and shell fisheries of the Jolo Archipelago are but little known to the world at large, and to a very restricted degree to commerce, yet upon the authority of expert testimony they rank, so far as quality of product and possibility of development is concerned, with the famous ancient grounds of Ceylon and the Persian Gulf and the more modern areas of Australia and Torres Strait. The fishing grounds of the Jolo Archipelago are credited with contributing to-day the greatest number of the finest round pearls that find their way into the channels of commerce.

The Sultan of Jolo, Hadji Mohamad Jamalul Kiram, claims jurisdiction over the Archipelago from the strait south of Mindanao to Borneo and from an indefinite line in the China Sea west of Palawan to another indefinite line east of the chain of islands including Basilan, Jolo, Siassi and Tawi Tawi. According to the unwritten law of the Moros, he owns everything on the land and in the waters of the sea, and title is held by the subject simply at the will of the Sultan. He therefore claims ownership to all shells and pearls in the waters of the Archipelago. This claim is recognized by the Moros, who pay for the privilege of fishing by giving or selling to the Sultan all pearls of a certain size or value at a nominal price.

The pearls themselves are simply a side issue, or rather a by-product, the pearl oyster shell, the mother of pearl of commerce, being the principal object of the fisherman's quest. These shells weigh from one to eight pounds per pair, some of them being as large as dinner plates and almost round. They are shipped in large quantities to Singapore and London. Nearly the entire business connected with the pearl fishing industry, like so much of the business of the Philippines is to a great extent in the hands of Chinamen, who pay the natives from forty to sixty cents, Mexican, per pound for the shells, and it is estimated that only from one-half to one percent of the shells contain pearls.

The pearl-bearing oyster is found scattered throughout the Archipelago in water of from one fathom to beyond working depth. The native method of fishing is crude and is followed very irregularly, for a lucky haul of shells will enable a native to lie idle for weeks, and he only resumes work when compelled by the pangs of hunger. There are two companies, however, one English and one Chinese, with headquarters at Jolo, which pursue the business in a systematic manner. They employ boats suited to the business, and equip their divers with diving suits and all the modern appliances of deep-sea exploration and conduct their affairs in such a manner that the returns of the business have been satisfactory to those interested therein.

Besides mother of pearl shells, black shells and snail shells are found in shipping quantities. The black shell is smaller than the mother of pearl shell and is almost as valuable, and like the snail shell, is used in the manufacture of pearl buttons and other small ornaments. The present volume of business may be estimated from the fact that during the first ten months of the year 1890 the custom-house at

Jolo showed shipments of 222,814 pounds of mother of pearl shells, valued at $75,712; there were exported also 1114 pounds of black shells, valued at $440, and 17,701 pounds of snail shells, valued at $5609. About the same amount was also shipped from the port of Siassi. This would make the value of the annual shipments from these two ports about $200,000. This sum it should be understood is for the shells alone without taking into account the value of the pearls found therein.

The Chinese and English companies already mentioned pay a certain sum to the Sultan for the privilege of fishing, and that the business is considered a safe and profitable one may be assumed from the fact that the Chartered Bank of India, Australia and China, and the Hongkong and Shanghai Banking Corporation have extensive interests in the business.

American officers stationed at Jolo, who are now somewhat acquainted with the industry and its possible development, recommend that on account of the undoubted value, the great extent and future productiveness of these fisheries, some intelligent legislation be enacted on the part of the government in relation to this subject, but owing to the more pressing demands in other quarters this has not yet been done.

The conditions essential to the most perfect development of the mother of pearl and the pearl-bearing mollusk, are a reefy bottom, near mud, and especially where there is a luxurious supply of submarine vegetation, coral cups, and another beautiful coral growth resembling "coach whips" four or five feet in length. Sweeping tides and an abundance of living reefs are particularly favorable to the growth of this beautiful iridescent mollusk.

These conditions exist to perfection in the waters of the Jolo Archipelago, where the pearl fishing is now carried on to a limited extent and also along the coasts of Palawan or Paragua, as it is also called, as well as along the Mindanao shores of the Jolo and Celebes seas. It is estimated that the area suited to the growth and propagation of the pearl oyster covers approximately 15,000 square miles, an area large enough to furnish a supply of mother of pearl more than sufficient to meet the present demand of the entire world, and the imagination only can picture the number, beauty and value of the beautiful pearls "of purest ray serene" that await discovery in the warm waters of these eastern possessions.

In making a more detailed description it may be said that the Jolo Archipelago embraces four principal groups of islands superimposed upon or surrounded by extensive coral formations in banks or reefs, as are so generally observed in the physical structure of tropical islands. They are Balanguingui, Jolo, Tapul and Tawi Tawi, including in all more than one hundred and thirty islands, many large enough to possess some geographical importance and others small and uninhabited, simply dots on the surface of the sea. The Tapul group, and the Pearl Bank at the extreme western end of the Tawi Tawi group are particularly famous for the excellence of their pearling grounds and the superior quality and quantity of their output.

While most mollusks secrete mother of pearl, there are but few that yield pearls, and the best producer of both is the pearl oyster of the Jolo waters. The finding of pearls, however, is as uncertain as the finding of rich nuggets in placer mining. It has been found that in opening over five thousand shells not a single pearl worth $25 was encountered, and again as many as a dozen have been found in a single shell, and there is a story current that an Englishman a few years ago found a shell devoid of the oyster but containing sixty-five pearls.

There have been all sorts of theories advanced as to the origin of the pearl. One ancient author states that the oyster rises to receive the rain-drops, which are afterwards converted into pearls, and this theory obtained among the natives of the new world at the time of Columbus, as they thought they were formed from petrified dewdrops in connection with sunbeams. The pearl has had a place in the materia medica of many lands, including even the United States. The prevailing idea, however, among scientists is that the formation is caused by an effort on the part of the oyster in which the pearl is found to rid itself of an irritation caused by the presence of some foreign body, which excited the secretion of nacreous matter in concentric layers until the foreign substance is encysted, much after the same manner as the human body encysts foreign bodies embedded therein and renders them comparatively harmless. The experience of pearl fishers lends weight to this theory because they find that shells irregular in shape, stunted in growth, bearing excrescences or having shell honey-combed by boring parasites are the most likely to yield pearls.

The value of the Jolo pearl, as of all others, depends upon its size, shape, color, brightness and freedom from defects. Perfectly round pearls, weighing over twenty-five grains, are rare and very expensive, being chiefly employed for rich necklaces, and as the sources of supply are widely separated and the output from year to year is uncertain, the prices remain comparatively stable, especially as precious stones cannot take the place of pearls in the estimation of the purchasers of precious ornaments. With the earliest use of pearls in connection with precious and semi-precious stones with gold for ornamentation, certain grades and qualities, and also the symmetry, were recognized as forming the basis of value, and these grades have been maintained with but little variation throughout the centuries.

The Romans called the globular pearl *unio,* the pear-shaped *elenchue,* the hemispherical *pympania,* and the irregular or baroque pearl *margaripum*. The Hindus also divide pearls into nine classes according to luster, shape and size. Speaking in a general way, the points of excellence among western nations are: First, a pearl must be perfectly spherical, as though it had been turned into shape in the lathe of a lapidary; second, it should possess a pure white color, of that peculiar pearly lustre that cannot be imitated—in the Orient the bright yellow color is highly esteemed; third, it should be slightly transparent or translucent; fourth, it should be free from specks, spots or blemishes; and fifth, it must possess that peculiar lustre or "orient" that is the special characteristic of the pearl.

Pearls are sold by the pearl grain, four grains being equal to one carat. The formula for finding the price of a pearl, beginning at a size larger than one grain, is to square its weight and multiply the product by the value of a single grain. A two-grain pearl, therefore, being worth four times, and a five-grain pearl being worth twenty-five times, the value of one grain.

These jewels of the sea, if jewels they may be called, occupy an important place in the history of precious ornaments, and there are records of some of surpassing beauty and value, but it is doubted whether even the famous pearls of Cleopatra equalled the beauty and perfection, the rarity and lustre of a pair, weighing two hundred and twenty-seven grains, exhibited at the French exhibition of 1878. The Crown Prince of Germany gave to the Princess Royal of England on the occasion of her marriage a pearl necklace valued at $100,000, an ornament of unrivalled beauty and impossible to duplicate. It is said that the most perfect single pearl in existence is "La Pellagrina," in the Museum of Zosima at Moscow. It is an Indian pearl perfectly globular in form, beautifully iridescent and weighs twenty-eight carats. The finest pearl discovered in recent years was found off the northwest coast of Australia in water only knee deep, in 1884. It weighs forty grains, is absolutely round and perfect in quality. One of the most remarkable pearl productions ever discovered in the sea is known as the "Southern Cross," a group of nine pearls in the form of a Latin cross, seven composing the shaft, which measures one and a half inches in length. They all possess fine "orient" and are perfect in shape except on the sides where joined together. This cluster was found in the Western Australia pearl fisheries in 1874.

In the large collection of pearls of the Sultan of Jolo have always been many specimens rare in size, form and lustre. A few have found their way into the markets of London and Paris as the condition of the royal exchequer ran low, and their excellence may be judged by the refusal to part with them at prices even higher than obtain in Europe.

Upon the death of a former Sultan in 1879, there was found among his effects a box full of pearls of large size and superior quality. Upon his demise, as frequently occurs in oriental households, the contents of this box disappeared, but a portion of the contents was subsequently recovered by his son and successor, the Sultan Buderoodin, and a few were sold in 1882 in order to defray the expenses of his pilgrimage to Mecca. Since that date a large number of fine pearls have found their way into the possession of the reigning Sultan, who has been slow to part with them. He is now an ally and friend of the United States, and the Stars and Stripes float over his dominions.

The pearl oyster shell is an important article of commerce, its value being dependent upon the quality of its hard silvery iridescent or nacreous lining, particularly noticeable in the Jolo product. The varieties known to commerce are the white, the golden-edged and the black-edged shells. The market value of the mother of pearl shell at average prices is from $300 to $900 per ton, according to quality and the source of production, the Jolo shells ranking highest in the market.

The chief sources of the present supply are Torres Strait, Western Australia and the Jolo Archipelago. Until 1886, Manila was the great center of this trade in the Orient, and the entire product of the surrounding seas became known to commerce as Manila shells, but the short-sighted policy of Spain in dealing with her insular possessions forced the transfer of this entire traffic to the British port of Singapore.

The present mother-of-pearl trade of the United States is in an unfortunate and abnormal condition because the raw material, the pearl oyster shell, a product of United States territory, passes first into British or Chinese hands through Singapore and from thence to London, whence it is shipped to the United States to be worked up in American factories. It is needless to say that this condition of affairs should not be allowed to continue, nor is the industry one of little importance. The importations of shells into the United States in 1898 were valued at $906,852, in 1899 at $973,944, and in 1900 at $1,019,730, so that it is a business that is showing a healthy normal growth, and is one in which this country promises to lead the world, as may be seen from the following somewhat antiquated statistics, but the latest available on the subject. The exports of mother-of-pearl shells from the leading sources of supply to Great Britain were as follows:

	1897	1898
Ceylon (India)............	....	$ 14,000
Hongkong (China)........	$240,000	175,000
Philippines..............	25,000	9,000
Singapore (Straits).......	531,000	561,000[1]
Queensland (Australia)...	531,000	564,000
Western Australia.......	4,000	22,000
Total............	1,331,000	1,345,000

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[1] The greater part of this supply came from the Jolo Archipelago.

The Persian Gulf fisheries, which yielded $641,000 worth in 1888, more than trebled their output in 1899, and as these grounds are known to have been fished over for more than two thousand years, they prove beyond a doubt that this valuable marine product can be produced indefinitely by proper supervision and the protection of the sources of propagation and supply.

The same care bestowed upon the pearl oyster grounds of the Philippines that is now given to the oyster beds of the Chesapeake Bay would no doubt be attention wisely bestowed, and the United States Fish Commission has no more interesting problem before it than to apply the experience gained from the waters of other lands to the protection and development of the beautiful bivalve of the Philippines.

It is scarcely necessary to mention the many branches of artistic handicraft in which the beautiful mother-of-pearl of the Jolo seas are utilized. It vies in radiant beauty with the delicate lace, the brilliant plumage, and sheeny silk employed in the manufacture of ladies' fans, lending added charms to flashing eyes that welcome or repel in social circles. It lends its inimitable lustre to costly card-cases, it is a favorite handle for the finest penknives, and is worked into a hundred fancy articles for use and beauty, but its most general use is in the manufacture of buttons. For centuries the Chinese have excelled as engravers of mother-of-pearl and fine specimens of their skill rank high as real works of art. In the city of Manila, and also in other places in the Archipelago, the verandas of the better class of houses are often enclosed with a latticework filled in with mother-of-pearl, and its effect is more delicate and pleasing than the more brilliant effects produced by cathedral glass.

It now remains for the American merchant to divert the trade to Manila or direct to the United States, and for the American citizen to find new uses for this most beautiful product of the tropic seas.

CHAPTER V

MINERAL RESOURCES OF THE PHILIPPINES

THE EXTENSIVE application of coal in the arts and industries is so familiar that it is difficult to realize that while the discovery of this important mineral is very ancient, yet its use is comparatively modern; in fact, its general application may be said to belong to the present day.

The coal deposits of the Philippines were first discovered in 1827 on the island of Cebu and, as stated by the engineer Abella, "did not succeed in inspiring any interest in the State, nor in private individuals, until the journeys of the first steamships to the Islands when the government issued, in 1842, a timely circular to the provincial authorities requesting them to furnish information regarding the coal deposits that might be in their respective localities."

The replies received in response to this circular are both curious and interesting. The mayor of Zambales reported that in the time of great freshets some pieces of black rocks that burn are accustomed to be seen in the Bañganbacao River of Botolan, but that he had not been able to secure any of them "because none have been seen during the present year." Practically nothing was done for a number of years to develop the coal deposits, or indeed to outline the extent of the coal regions known to exist, and the efforts of the local authorities were directed to securing from the supreme government a positive decree compelling the local navy to use Philippine coal and preventing the importation of English coal by levying prohibitive import duties.

Coal has been found generally distributed throughout the Philippine Islands, and between the years 1868 and 1899 one hundred and thirty-five entries were filed for coal-mining claims, situated in nearly every important island of the Archipelago. Mr. George F. Becker, United States Geologist, in treating of the island of Luzon, reports: "In fact deposits of coal are distributed from the northern end of Luzon to the southeastern extremity. Of many of these occurrences nothing more is known than that lignite has been found. The vegetation is so luxuriant that in many cases it is something of a task to ascertain anything more definite. The best deposits known appear to be in the extreme southern end of Luzon and on small adjacent islands. Here the quality is good and the thickness of the beds reaches nearly fifteen feet. The outcrop is near the shore, and it is here that the insurgents supplied their steamers with fuel."

At various distances from Laguna de Bay, in the provinces of Laguna and Morong, are also many known beds of lignite, some of them of sufficient size and convenience to render them profitable for development as soon as the necessary roads and bridges can be supplied for the purposes of transportation.

Lieutenant Charles H. Burritt, the officer in charge of the Philippine Mining Bureau, reports coal in that region both good in quality and extensive in quantity, and he furthermore expresses the opinion that the coal wealth of the Islands surpasses that of all the other minerals that may be discovered in the Archipelago. The importance of this supply of fuel to the Islands can scarcely be overestimated, as it must be the foundation on which will be constructed the future manufacturing industries of the people, who manifest no little ability in working up into useful forms the raw material at their hands.

The past history of coal mining by the Spaniards is a long record of ignorance, avarice and mistakes. They attempted to mine coal as though it were a precious metal, and indeed it became so in some instances when measured by the cost of production. The facilities for bringing it to the surface were entirely inadequate for a profitable amount of production, and transportation, which in many instances seemed to be an afterthought, was so ill adapted that no one ever made a financial success of coal mining. The labor question has also been an obstacle to the proper development of the mines.

Chemical analyses of Philippine coals from different regions and actual tests under the boilers of Spanish war vessels have demonstrated that their combustible and steam-producing capacity make them valuable and capable of taking the place of imported coals for many practical purposes. At one time the government was so impressed with the value of this industry that it was for a long time a monopoly in which the government was interested, but as a business venture it was not a success.

On the whole, the coal deposits offer opportunities for investment which may well invite thorough investigation, and should they be developed on an extensive scale will soon solve the fuel and power question, which at present is one of the serious problems which the Islands must face.

On the island of Cebu, petroleum has been found associated with coal at Toledo on the west coast and from Algeria to the south. Natural gas is also said to exist in the Cebu coal fields, but both of these products must be classed as speculative in the absence of more positive information, and their probable existence only adds to the general interest in that island. Petroleum highly charged with paraffin is also found on the island of Leyte, and reports of the existence of oil have been received from Panay, in the province of Iloilo, but it will take future operations of the drill to determine the extent and commercial value of these deposits.

The magic word gold is often used in connection with the Philippines, and should rich deposits be discovered the pacification of the insurgent districts and the immigration of an American population would soon be accomplished without any special legislation on the part of the government. Men who conquered the difficulties of the Chilkoot Pass and braved the rigors of a dark winter under the Arctic circle, men who have forced wealth from the Rand in South Africa, and the sons of those who crossed the American continent in '49, lured by the power of gold, and have since built up in the west a score of noble States, would soon put an end to the present troubles and lay the foundation of a higher civilization.

Gold is found in a great number of localities in the Archipelago from northern Luzon to central Mindanao. In most instances it has been discovered in existing water courses or in stream deposits that have been deserted by the currents. It is reported that in Mindanao some of these auriferous gravels are in elevated positions which would admit of hydraulic mining, and there is an abundance of water, making such methods practical. The primitive method hitherto employed by the natives consists in washing the gravel in little dishes made of cocoanut shells, and there are no data obtainable that would indicate the extent or richness of these placers. In the province of Abra, at the northern end of Luzon, there are placers that have been worked in a haphazard sort of a way for a long time, and the gravel of the river Abra is also auriferous. In Lepanto, gold quartz veins as well as gold-bearing gravel are known to exist, and both are situated in the vicinity of copper mines in the same district. In Benguet, in the highlands of north-central Luzon, the gravel shoals of the river Agno carry gold, and gold is found also in the province of Bontoc and Nueva Ecija. The most important of the auriferous provinces is Camarines Norte, where at Mambulao, Paracale and Labo, a German geologist about thirty years ago reported that seven hundred natives were at work on the rich quartz veins of that region at the time of his visit. At Paracale there are parallel quartz veins in granite, one of which is twenty feet wide, in which the "pay streak" is said to assay thirty-eight ounces to the ton, but it would not be safe to assume this as an average sample.

Mindanao is known to possess two gold-bearing districts, one in the province of Surigao and the other in Misamis. These two districts are in two distinct river systems, separated by high lands, and the imagination cannot but trace these fluvial deposits to their home in the mountains. Near the settlement of Imponan and on the Gulf of Macajalar are reported many square miles of gravel carrying gold associated with platinum. Some years ago with cocoanut shells the natives are said to have extracted one hundred and fifty ounces per month of the precious metal.

Among the troops first sent to the Philippines were a number of regiments from the mining States of the west. These men were accustomed to prospecting at home and were as good at finding " color " in the pan as " hiking " after the enemy or rushing insurgent entrenchments. They were alert, of course, for signs of gold and frequently reported to their officers that they had found unmistakable evidence of the presence of gold, and many of them, instead of returning with their regiments to the United States, remained in the Philippines for the purpose of taking up and developing mining claims as soon as legislation should be enacted that would allow them to secure title to their discoveries.

Some skepticism has been expressed as to the gold future of the Islands in view of the fact that the Spaniards, known to be expert miners, occupied the country for three hundred years, and it is asserted that, had there been gold deposits, they would have located them. While there may be something in this statement, it must be remembered that the Mexicans and Spaniards were in California for a long time, and a few days after the signing of the treaty of Guadalupe Hidalgo, by which California was transferred to the United States, gold was discovered and the country poured out a golden wealth to the enrichment of the world. The Spaniards have been miners of silver, rather than gold, and their lack of activity in the Philippines should not be taken as conclusive evidence that there is no mineral wealth in that region.

Copper ores are reported in a number of the Philippine Islands, viz.: Luzon, Mindoro, Capul, Masbate, Panay and Mindanao. No successful attempts have been made to work the deposits in any of the Islands except Luzon. In the region about Mount Data, a peak some 2500 meters in height, in the province of Lepanto, copper ore has been smelted by the natives from time immemorial, even before the discovery of the Islands by Magellan. The somewhat complicated process employed is thought to have been introduced from China or Japan, for it is almost certain that the natives did not possess the degree of intelligence necessary to have invented the method. It is practiced chiefly by the Igarrotes, who form a peculiar tribe, remarkable in many ways. This entire district, judging both from known facts and rumors not yet verified, concerning its mineral resources, is worthy of a thorough scientific investigation.

A lead mine has been partially developed near the town of Cebu, on the island of the same name, and on the small island of Marinduque there is said to be a deposit of argentiferous galena containing ninety-six grams of silver, six grains of gold and 565.5 kilograms of lead per metric ton.

Iron ore is abundant in many of the Islands both in the north and south and at Bulacan there is a small industry where wrought iron is produced and manufactured into rude plowshares. The abundance of timber throughout the Archipelago would seem to indicate that charcoal pig iron might be profitably produced, though it is a question as to whether the lignites of the Philippines would be suitable for use in blast furnaces.

Sulphur is abundant about both the active and extinct volcanoes, of which there is a great number. Marble of fine quality also exists and has been quarried to some extent, while alabaster is found in Camarines Sur. The great island of Mindanao, with extensive river systems penetrating far into the interior, and great mountain systems dividing them from each other, is practically unexplored, and the auriferous nature of many of the fluvial deposits are such that when the country becomes pacified and a better understanding is established with the Moro tribes in the interior, there is no doubt that its mineral resources will be thoroughly investigated, something the Spaniards never accomplished during their long residence in the archipelago.

CHAPTER VI

MANILA HEMP

HEMP, or *abacá,* as it is called in the Philippine Islands, is the most valuable product of the Archipelago, measured by the amount of the annual exports. In 1900, over $13,000,000 worth was exported, while copra to the value of $3,000,000 was the next most important article of export. All experience in the Islands both prior to and subsequent to American occupation awards to hemp-growing the first place among agricultural enterprises.

Hemp is the fibre of a wild species of the plantain or banana plant, *Musa textilis,* found in many parts of the Philippines. It bears no edible fruit, yet it takes a connoisseur to distinguish between it and some of the fruit-bearing varieties. Although the plant requires a considerable amount of moisture, it will not thrive on swampy land, its favorite habitat being well-watered slopes where the drainage is good, and, like coffee, it must be well shaded by other trees to protect it from the sun's rays. Richness of soil does not seem to be essential to its proper development, as it is sometimes found growing on the slopes of volcanic formation that have not yet been sufficiently disintegrated to make good soil for the production of other crops. The plant attains a height of about ten feet and is endogenous, with the stem enclosed in layers of half-round *petioles*, which produce the fibre. It is very generally distributed over the islands of the Archipelago, and it is strange that it has not been successfully cultivated in other lands where similar physical conditions obtain. It is thought by those who have given some attention to the subject, that the failure to transport the industry to other countries eager to share in the gains derived from this rich product is owing not so much to the non-adaptability of the plant as to the fact that the successful treatment of the fibre is peculiar to the natives of the Philippines, an art acquired through long years of practice.

There are few crops less exposed to accident than hemp. Dry weather might parch the plant, but with rainy seasons, as regular as the tides, this risk is small indeed. Insects, which are the curse of so many other crops, do not trouble the hemp plant, and it bends before the storms that would lay waste fields planted with a more brittle growth.

Land suitable for hemp-growing is in the market, though the whole question of land titles in the Philippines is not in as good condition as it should be in order to stimulate the proper development of the country. The description of boundaries, the history of transfers, the records of the different provinces, and even the original grant, are all in confusion and fruitful of interminable litigation, which ought to be regulated by some general legislation. The landholders, after the custom of their fellows in more civilized countries, always ask more than they expect to receive for their property, but good fresh soil, favorably located, ought to be purchased for ten dollars per acre. Choice plantations already producing fibre would not be considered particularly cheap at fifteen dollars per acre, and it is affirmed that land adapted to the cultivation of hemp can be purchased in some of the southern islands at from one to two dollars per acre. The question of transportation must always be taken into consideration for the crop is both bulky and heavy, and owing to the absence of roads, if there is no natural waterway along which the fibre can be taken to tidewater and embarked on a coasting vessel, its value is simply nominal. This of course in time will in many places be remedied, but investments cannot await the somewhat deliberate methods of tropical road-building. Apart from the original cost of the land, which would vary according to quality, convenience to market, and its ability to attract the necessary help, calculation should be made for the original planting, and it is estimated that seven hundred plants can be grown on a single acre. A plantation would, furthermore, need storehouses, sheds, a baling press and the usual farm outfit, though the plants themselves require but little cultivation after they are once fairly started. The cost of planting occurs but once, for new shoots spring from the roots of the mature plant when cut down, though it takes about three years for a plant to reach maturity.

In order to extract the fibre, the leaf stems are separated and allowed to wilt for a short time in the sun. They are then separated into strips, five or six inches in width and drawn under a knife attached at one end by a hinge to a block of wood, while the other end is suspended to the extremity of a flexible pole or stick. This forms a sort of a bow and tends to raise the knife, and by means of a cord attached both to the knife end and to a foot treadle the pressure can be regulated and adapted to the piece being treated, at the will of the operator. Each piece is drawn between the block of wood and the knife for the purpose of scraping the pulp from the fibre, which is wound around a stick as fast as drawn from under the knife. The pulp is useless. The fibre as soon as separated from the pulp is exposed to the sun for at least five hours, after which it is ready for baling. The entire process is very simple, and the machinery crude and non-expensive. Most of the presses employed are run by hand power and the regulation bale weighs two hundred and forty pounds.

A finer fibre is at times obtained from specially selected edges of the *petiole*, and this is used by the natives for weaving a cloth peculiar to the country; the quantity, however, is at present limited and its commercial value is about double that of ordinary first-class cordage hemp.

About thirty percent of the fibre is lost by the present method of extraction, a waste that ought not to continue, and that will doubtless be remedied when American inventive genius takes up the question of an improved practical method of extracting the fibre. Many attempts have been made to draw the fibre by machinery, but notwithstanding the efforts put forth, no inventor has yet succeeded in producing a satisfactory machine. A Spanish inventor perfected a complicated machine that would do the work, but it possessed the fatal defect that its output was but little, if any, greater than the present method of hand extraction. The fibre appears to be very susceptible to discoloration while damp with the juices of the plant, and unless its white color is maintained it loses value in the market.

A fortune awaits the lucky inventor who will succeed in producing in an economical manner a greater percent of the fibre without injury to its strength and without discoloration. It is not too much to assume that a people who have invented machines to plant, cultivate, harvest, and prepare the varied crops of the North American continent, and of such pronounced superiority that the whole world is eager to buy or imitate them, will be able to solve many of the present problems connected with the hemp industry of the Philippine Islands.

The greatest difficulty with which an American hemp-grower would at present have to contend is the indolence of the native laborers on whom he must depend. Nature is so prodigal of her gifts in the tropics, and the actual necessities of life are so few, that the half-clad, rice-eating native cannot understand why he should toil every day in the week when a few days of labor will supply all of his wants for a month. In time this situation will be overcome in a measure by the creation of new wants.

The Filipino, when permitted to exercise his own choice in the matter, cuts the plant at any time after maturity. When hard pressed for cash he strips a few *petioles* and leaves them for days exposed to the action of the weather in order that the fibre may be extracted from the pulp with less labor. This method both weakens the fibre and discolors the hemp. He also works into the mass a certain amount of dried sap in order to give increased weight to the bundle he presents for sale. There are also many other tricks of the trade against which the purchaser must be constantly on guard.

The larger producers and dealers use every effort to grow, elaborate and ship fibre that is fine in quality, perfectly clean and white, and that at all stages of its preparation has received proper treatment. Two reasons induce them to take these precautions. They have a natural and laudable desire to maintain the deserved reputation of the Manila hemp, and then the price paid for the first quality is so much higher than for the lower grades that it is to their financial interest to market the best that can be secured.

The hemp industry has been constantly increasing in importance and volume save when interrupted by war. In 1872 the shipments amounted to 40,000 tons; in 1880 that amount had increased to 50,000 tons; in 1890, 63,000 tons were exported; and in 1897, the last year before the war, the total amount was 109,000 tons.

Another of the serious problems that must be met by the hemp-grower, and this holds true equally of any industry undertaken in the Philippines, is that the natives will not work without being paid in advance, and they are distressingly indifferent about liquidating accounts after the money has been received and expended. For this reason it often occurs that capital which might be employed to advantage is withheld from investment, and the natives complain that there is no money to grow or move the crops. It will not be an easy matter to change this custom, and yet a reform in this direction must be wrought before either the planter or laborer can hope to secure the best possible results from this industry. The public schools that have been established, with the broadening of vision that ought to characterize the next generation should contribute something to this reform, and as a last resort, in case native labor cannot be secured, the importation of other cheap labor, that is now being urged in many quarters, will supply hands for the field and factory.

The hemp fibre is widely distributed over the world, the United States and the United Kingdom taking the greater part of the product. They in turn work it up into cordage and send it abroad to all places where ships are fitted out or in the form of binding twine wherever wheat is grown. The 95,738 tons shipped from the port of Manila in 1896 were distributed as follows:

Country.	Piculs (133 lbs.)	Long Tons.
United Kingdom	815,044	50,940
United States	615,554	38,473
China and Japan	49,494	3,093
Australia	33,892	2,118
Singapore	12,166	760
Europe	5,660	354

Of the 940,000 bales exported in 1897, 486 reached the United States, part of it through the United Kingdom, while for the seven months ending July, 1901, the United States took $1,402,000 worth of hemp and the United Kingdom is credited with having taken $7,206,000.

There is at present an export tax amounting to seventy-five cents per hundred kilos charged on all hemp exported from the Philippines, but in a bill passed by the Congress of the United States and approved March 8, 1902, provision is made that:

> **"All articles, the growth and product of the Philippine Islands, admitted into the ports of the United States free of duty under the provisions of this Act and coming directly from said Islands to the United States for use and consumption therein, shall be hereafter exempt from any export duties imposed in the Philippine Islands."**

The effect of this provision will be that hemp exported to Europe or any other country except the United States will be subject to the export tax above mentioned, while that exported direct to the United States will be exempt from said tax. This will give the American dealer a decided advantage in the hemp trade, and American cordage works ought to be able to make binding twine for the Argentine, and all other wheat-producing countries at prices that will compete with those offered by any other country. This very fact will have a tendency to direct Americans to the hemp-growing industry, and important developments may be expected in the near future.

Hemp, unlike other tropical crops, is not suffering from the effects of an overstocked market, low prices, nor will it have to compete with any similar product of the temperate zone. Sugar, for example, is having a great struggle for continued existence, as the beet sugar production of the temperate zone has crowded down the price of the cane sugar of the tropics until the margin of profit has almost, if not quite, reached the vanishing point. Coffee, also, while not compelled to compete with any like product, is so generally distributed throughout the world and its cultivation is capable of so much extension that handsome profits can be realized only by certain favored regions which produce fine grades and which are able to command fancy prices. Manila hemp, however, has no competitor and the demand, which is a growing one, far exceeds the supply. The present market could readily absorb twice the amount that finds its way to the factory.

While as stated, Manila hemp has no successful competitor, its high price and limited quantity have obliged manufacturers to search the world over for substitutes. New Zealand hemp is employed in some branches of manufacturing in place of the Manila variety, and the same may be said of a certain class of hemp grown on the island of Mauritius. Sisal, East India and Russian hemps, while quite distinct from the real hemp of Manila, have been used for it to some extent, but they must give way to the long, strong, white fibre when the supply becomes equal to the demand.

As has been indicated, the hemp plant is very generally distributed throughout the Archipelago, the best quality being produced in the volcanic and rainy districts of Camaraines Sur, Albay, Samar, Leyte, Marinduque, Cebu and in some of the small neighboring islands, as well as in the south of Negros and Mindanao. This product during the late war became like cotton in the South during the war between the States, contraband of war, and certain hemp ports were closed so that the insurgents could not dispose of their crops and thereby secure means to purchase supplies with which to carry on the struggle against the sovereignty of the United States. It is a striking coincidence that the cotton fibre and the hemp fibre should have figured so extensively in two wars waged by the United States, and, as in the case of cotton, the final result was a wonderful development in the growth and manufacture of that staple, so in the case of hemp, when the Islands again devote their energies to peaceful pursuits, the hemp industry will take on an importance hitherto unknown and will contribute to the wealth and well being of this entire section of the United States.

CHAPTER VII

AGRICULTURE

AS THE Philippine Archipelago lies between the fifth and twenty-first degrees of north latitude, with a great range of elevation and variety in the composition of its soils, it necessarily presents marked variations in its vegetation, both in the forest and in the cultivated field. A crop report if in any way complete would contain many substances entirely unknown to the more temperate zones of the United States. In general the flora is tropical, while in the southern part it becomes equatorial. There are marked differences in vegetation also between that produced on the Pacific coast and that of the China Sea. In the former region the rains are more abundant than in the latter, which, being covered with compact mountain ranges, has a more limited agricultural zone.

Next to hemp, which has been treated in a former chapter, rice is perhaps the most important crop raised in the Islands, constituting as it does the staple and almost exclusive food of the natives, and indeed of most of the poor people of the entire Orient, there being no limit to the demand. Like wheat and corn, there are a great number of varieties, some suited to one region or manner of cultivation and others best adapted to other conditions. A collection of one hundred and twenty varieties exhibited by Señor García at the Paris Exposition in 1878 received the only gold medal awarded by the judges to Philippine exhibitors. Two main classes are generally recognized owing to the manner of their respective methods of cultivation: the first are those varieties cultivated on low irrigated lands, and the second are those cultivated on the uplands without irrigation. The class locally known as *mimis* is highly esteemed on account of its white transparent grain and exquisite flavor.

The growing of rice is one of the few occupations which the natives pursue with extreme care, though the crude appliances hitherto employed do not permit great profits to accrue to the cultivator. The Philippines, like most oriental countries, have pursued the policy that human labor is cheaper than machinery, and therefore almost everything is done by hand. In rice cultivation the land is divided into small rectangular parcels with little ridges thrown up around them, which serve to retain the water used in irrigation. The grain is first sown by hand in beds specially prepared, and while sprouting the fields are worked into a soft mud by the water buffalo (carabao) and when the plant is a few inches high it is transplanted by hand—imagine an American farmer planting ten acres of sprouted wheat by hand—and then requires no further care until harvest time, when the grain is gathered with the aid of a little sickle, that will cut but a few stalks at a time. The grain is separated from the straw by tramping it out with the carabao, and the hull or chaff is removed by pounding it with a heavy wooden pestle in a rude wooden mortar, and winnowed by tossing it in the wind. Were it not that so many people are engaged in the production of this grain, and that the entire family—men, women and children—aid in the various processes, it would be impossible for the Islands to raise even the quantity that is at present produced.

Rice has many enemies, the most formidable being the locust, which sometimes totally destroys the crop, causing great suffering among the poor. An insect also at times attacks the tender grain while growing, sucking out the juice or milk and leaving nothing but the husk. In certain regions, also, constant warfare must be made by the farmer against the ravages of birds and monkeys, both having a fondness for rice.

In former years large quantities of this grain were raised for export, but in recent years, owing to the increased production in Cochin China, large amounts have been imported in order to supply the local demand, and lands formerly devoted to rice culture have been given over to the more profitable cultivation of sugar cane. With rice machinery, such as is now employed in the United States, applied to the production of this crop in the Philippines, the production will no doubt be greatly increased, and the cost of production will be so reduced that there will be a good margin of profit to the farmer.

Sugar cane, like rice, is classified with the grasses by botanists, and in the Philippines is an agricultural product of great importance, and now that the Islands belong to the United States and have already been granted a reduction of twenty-five percent on the present United States tariff rates, with good prospects of the complete abolition of all duties, as has been the case with Hawaii and Porto Rico, the great sugar market of the United States, now consuming two and a quarter million tons annually, will undoubtedly stimulate the sugar industry of the Philippines.

The present sugar-producing regions are the provinces of Pampanga and the island of Negros, and on a smaller scale cane is raised also in Laguna, Bataan, Batangas, Iloilo, Cebu, Cavite, Pangasinan, Capiz, Antique and Mindanao. The cultivation at present is carried on with but little care and intelligence, and therefore the quantity and quality of the crop has been declining for some time. There is not a modern sugar-producing plant in the Archipelago. The quality of the cane has deteriorated, and the methods of extracting the juice from such cane as is grown is faulty and wasteful, as is also the after-treatment of the juice. Under American control, with the agricultural schools and experimental farms which have now been established, and with the introduction of improved machinery, the industry will take on new life and activity. In Hawaii the best sugar lands are valued at from $800 to $1000 per acre, and under intelligent direction and with the improved processes now known and employed in other lands, the good sugar lands of the Philippines ought to become equally valuable provided that its sugar is granted free entry into the United States.

It is impossible from the data obtainable to state how much of the territory of the Philippines is suited to cane cultivation, but that it far exceeds the sugar area of Hawaii or Porto Rico can be affirmed with safety, and it may approach the present sugar area of Cuba, which is now producing almost 1,000,000 tons per year.

Tobacco was introduced into the Philippines by missionaries during the last quarter of the sixteenth century, the seed having been brought from Mexico. There are a number of varieties of the *nicotina* family, but the growers in the Philippines pay but little attention to botanical or scientific classifications and more to the form and utility of the plant, dividing it into two general classes, the wide-leafed and the narrow-leafed varieties.

The qualities which determine the price of tobacco are combustibility, strength, aroma, fineness, elasticity, color and uniformity. The Philippine tobacco until recently was considered the second best in the world, being surpassed only by the finest Havana or Cuban leaf. Its agreeable aroma, fine veins and notable elasticity were highly prized, but during the past few years it has lost something of its former reputation. It has suffered like all other natural resources of the Archipelago by that lack of care and attention which seems to have marked every colonial interest of Spain, and by the utter indifference on the part of the government to the building up and improvement of native industries.

There is, however, much first-class tobacco raised in the Islands, and the choice cigars from Manila, both for aroma, bouquet, and excellence of manufacture will compete in any market with the best products of the Havana factories. The leaf from the province of Isabela de Cagayan is considered the finest, comparing favorably with the product of the Vuelta Abajo district of Cuba; that from the Visayan Islands is coarser, more unequal in color and stronger in taste; that produced in the province of Nueva Ecija is fine, but rather bitter in flavor and yellow in color; the tobacco from Union and Ilocos is heavy and lacks combustibility.

A large amount of the native product is consumed at home, as smoking is almost a universal habit among both sexes. Spain formerly took the greater part of the leaf tobacco exported, as the tobacco industry was a government monopoly, while China and Singapore took about seventy percent of the manufactured stock. The sale of Philippine cigars in the United States has greatly increased since American occupation; indeed it may be said to have commenced since that date, and the entire tobacco industry, both as to the cultivation and harvesting of the leaf and its manufacture and distribution, will be stimulated by the changed political relations of the Islands. The intelligent selection of seed, careful cultivation, fertilization when necessary, and the proper care of the leaf will restore the former enviable reputation of the Philippine tobacco and contribute to the wealth of the Islands. There is no doubt that the conditions of soil and climate are favorable to the production of the finest qualities, and nature having done her part, it remains for science to take advantage thereof. Tobacco dealers in the Philippines have the advantage of being so situated that China and other places in the Orient will absorb all the low-grade goods they can produce, while the United States affords a market for all the finer export cigars that may be manufactured.

The cultivation of coffee has been carried on in the Philippines for more than a century. It was first planted in the province of Laguna, and the same sad story of neglect and deterioration that has been told as to other products of the Islands must be recorded with reference to it. Coffee has suffered from lack of proper transportation facilities, for competition in all crops is now so active that none of them can overcome high freight charges, and every neglected field is a crying argument for better roads. For some years but little attention has been given to coffee-growing, notwithstanding the fact that the neighboring island of Java became wealthy from its coffee production and set the standard of excellence for the world.

The remarkable extension of coffee planting in almost every part of the torrid zone has so increased the supply that only the better qualities can now command remunerative prices, and this fact lends hope for the future development of this industry in the Philippines, as its berry compares favorably with that of Java or Martinique, and there are certain localities which produce coffee which according to the evidence of experts can be compared only with that of Mocha.

The vast agricultural possibilities of the Philippines are big with promise. Spain never contributed intelligent systematic support to the agriculturist either in the way of equitable laws or by wise instruction or direction. There is no more attractive field in the world to-day for the skilled agricultural experimenter. The soil, the climate, the humidity are all favorable to luxuriant growth. Differences in elevation place at the command of the planter all climates from equatorial to temperate, and with the new population that is crowding in a market will be found for all that can be raised.

Wise selections based upon observation and thorough tests will determine what varieties of rice, cane, tobacco, coffee and other crops are best adapted to the conditions which obtain in the islands. Modern methods of planting, cultivating, harvesting and preparing for market will increase the output and profits of the farmer, while machines suited to the various crops will supply to a great degree the lack of labor which has hitherto been the chief obstacle to the extensive cultivation of any single crop. The government has wisely arranged the tariff so that agricultural machinery is obliged to pay but a nominal duty, and the agricultural interests will realize under the new regime that the government desires to foster rather than oppress the true producers of wealth.

The production of copra is one of the important industries of the Philippines, copra being simply the dried meat of the cocoanut, which is one of the essential plants of insular tropical life, supplying, as it does, so many industrial, economic and even medicinal necessities of the natives. Commercially its chief value is as an oil producer.

The cocoanut belongs to the palm family, the original home of which is said to have been in India, but as the fruit is riparian in growth, and is also a good sailor, ocean currents have carried it to almost every tropical island, and it has become a distinguishing feature of insular landscapes. The tree will grow almost anywhere, providing the climate be warm enough, and does not demand any particular kind of soil, though sand, salt water and sea breezes seem to contribute to its growth. The trees may be grown from the ripe fruit or nuts placed in *situ*, or seed beds can be prepared and the young plants transferred therefrom to the plantation. The trees where cultivated are usually set from thirty to forty feet apart, and after being once fairly started require but little subsequent care. They are of slow growth, reaching the fruit-producing stage, in good ground, in about seven years, while trees less favorably situated do not commence to bear until the twelfth year.

The nuts are collected every four months, and when possible are floated to market by being made into a raft bound together with a sort of a net, the owner riding on top.

During the ten months ending April 30, 1900, $1,048,260 worth of copra was exported, and for the corresponding period of the following year the amount increased to $2,382,900, showing that it is an important factor in the industrial life of those people. It is one also that is almost entirely in native hands. The oil extracted from the copra was formerly used for illuminating purposes, but it has been found that it is more economical to sell the copra and purchase petroleum.

Like all other Philippine enterprises, this industry is capable of marked improvement, and inventive skill will doubtless make it possible to extract the meat of the cocoanut in some more expeditious and economical manner than by scraping it out by hand with a curved knife.

The cacao is another contribution, like corn and tobacco, which America has given to the cultivated crops of the world. It is a tree distinguished for its beautiful appearance, but even more noted for its fruit, which is highly prized, as shown by its botanical name, *theobroma* (food for the gods). The seed of this tree when properly roasted gives forth a delightful aroma, and when well ground and mixed with the proper proportions of sugar and cinnamon forms the chocolate of commerce, a nutritious, healthful and agreeable food.

The cacao has been cultivated for a long time in a small way in a number of provinces in Luzon and Visayas, but it flourishes best in southern Mindanao and in the district of Davao it is produced in large quantities and of excellent quality. The tree grows from thirty to forty feet high, has straight branches, the leaves oblong or ovate-oblong are acuminate, strong and smooth and of the same color on both sides. The small flowers are red in color and very numerous. The fruit is tinted red or inclined to yellow, ovate or oblong, having ten ridges, and simulates to some degree the form of a small cucumber. The seeds are somewhat larger than an almond.

The cacao, like the coffee, requires both care and shade, and the banana or a tree called *madre cacao* (mother of the cacao) is usually planted with the cacao in order to protect the young plants from the direct rays of the sun. It is necessary to remove all premature flowers, trim off dry branches and keep the ground well cleared from other growths. The productive period of the tree continues for about thirty years, and while it will continue to thrive for a longer time it ceases to be productive.

The nutmeg grows without cultivation in Cebu and in Laguna province, and by cultivation will flourish in all parts of the Islands. In the Dutch East Indies, where the cultivation of the nutmeg has received the greatest attention, the plant or tree grows to a height of forty feet. The trunk is covered with a thin black bark, slightly mottled in appearance, and when cut or wounded exudes a red juice which coagulates on coming in contact with the air. The fruit in size resembles a small peach, having a thick husk and a hard pit about the size of an almond within which the nutmeg is formed. The latter is enveloped in an aromatic skin or membrane known to commerce as mace. From the beautiful flowers of the tree, which are aromatic, the natives make a preserve noted for its fragrance.

While the demand for this product is apparently not large, yet it forms an important article of commerce and should not be overlooked when considering the resources of and opportunities in the Philippines.

The cinnamon tree is also a native of the Philippines, being found in abundance in Mindanao. In Zamboanga, Caraga and in the mountain districts of Misamis, varieties of cinnamon of stronger taste and fragrance than that of Ceylon are found, although it contains a bitter element which depreciates its value, but this might be eliminated by cultivation. The tree should be more highly prized than it is at present, for it grows easily wherever planted and requires no special care. The cinnamon of commerce is the bark of the branches which is removed after they have been stripped of the outer bark, and ought to form an important addition to the resources of the Islands. Pepper is also produced in many parts of the Archipelago, but little is exported, as sufficient attention has not been paid to it to enable the Philippine product to compete with other parts of the East Indies.

It is impossible to do more than enumerate the principal fruits and vegetables grown in the Islands. But little attention has been paid to improving varieties, and a great change for the better can be wrought by intelligent attention to this field. There are a number of varieties of beans, potatoes, sweet potatoes, onions, garlic, asparagus, radishes, cabbage, artichokes, endives, peppers, tomatoes, carrots, celery, parsley, indian corn, squash, cucumbers and melons. Strawberries and pineapples are also grown, the former to a limited extent and the latter quite generally. Nearly all the tropical fruits are found in abundance, and while but little attention has been given to their cultivation they will lend themselves to marked improvement by care, will add much to the pleasures and comforts of the table, and will aid the housewife in preparing the family menu.

Among the many other trees of economic value in the Philippines are a number from which essences or essential oils may be extracted, but the most important at the present known is the ylang ylang tree. It grows both in a wild state and under cultivation, attaining a height of about sixty feet. It is botanically known as *cananga odorata* (Hook) or *unona odoratisima* (Bl) and belongs to the custard apple family. Its leaves are two and a half inches wide by six inches long, and the yellow-tinted flowers are about three inches long and of extraordinary fragrance, from which is distilled the celebrated attar of ylang ylang.

The attar of roses, the famed essential oil of the Damask rose of Kazanlik on the slopes of the Balkans, finds a competitor in this Philippine product, considered by some as its equal in perfume, a more generous yielder of essence, and therefore a less expensive basic essence for the perfumer's art.

The ylang ylang, sometimes spelled ilang ilang, while indigenous to many parts of tropical Asia, grows best in the Philippines, where it is a favorite with the natives. The tree is common to many localities south of Manila, being found chiefly in the well-populated islands and provinces, and it is affirmed that it thrives best near human habitations. It is propagated in plantations by seeds or cuttings placed about twenty feet apart in each direction. It grows rapidly in almost any kind of soil. The flowers appear the third year, and when the tree is eight years old it will yield as high as one hundred pounds of blossom. It blooms every month, but the best period is from July to December.

The process of converting the long yellow petals of the flower into essence is by the simplest form of distillation, no chemicals being required. The oil vaporizes in a closed boiler at a temperature of 220° F. The first quality must be as clear as distilled water and of course fragrant, while the second grade is somewhat yellow and smoky. The oil is drawn from the bottom of a glass separator, filtered through talcum and then is ready for the market. About seventy-five pounds of flowers will yield one pound of oil. The flowers are worth from eight to fifteen cents, gold, per pound and costs about $4 to manufacture. It is practically without competition in the markets of western nations and readily sells at from $40 to $55 per pound, the supply being unequal to the demand. The perfumers of Europe, and to a less degree those of the United States, make it the basis of some of their most expensive extracts. The supply hitherto employed in the United States has been imported from Germany and France, which countries have a monopoly of the product, which is usually secured in advance under contract.

The yield of attar of roses is small. It requires a hundred and fifty pounds of leaves to produce an ounce of the oil, so the yield of the oil of ylang ylang is over thirty times greater than that of the attar of roses.

There are flowering groves in many parts of southern Luzon and the Visayan Islands, and it is stated that the vicinity of Manila is well adapted to the growth of this beautiful and valuable tree.

CHAPTER VIII

BANKING AND CURRENCY

THE PRESENT banking facilities in the Philippines are provided for by the following institutions: The Hongkong and Shanghai Banking Corporation, the home office of which is in Hongkong with branches in the Philippines at Manila and Iloilo. According to a report made to the Philippine Commission by the Treasurer of the Islands on June 30, 1901, this bank reported assets and liabilities amounting to $19,036,636.74 (Mexican) at its Manila branch and $2,170,277.93 at Iloilo.

The Chartered Bank of India, Australia and China, with home offices in London, reported on the same date assets and liabilities amounting to $13,315,199.27 (Mexican) at Manila and the branch at Cebu reported $605,473.45.

El Banco Español Filipino (The Spanish Philippine Bank) reported assets and liabilities to the amount of $10,452,541.78 for the home bank at Manila and $1,212,597.12 for its branch at Iloilo.

El Monte de Piedad y Caja de Ahorros de Manila (The Pawn Shop and Savings Bank of Manila) reported assets and liabilities to the amount of $1,156,718.38 (Mexican).

These are the only regularly organized banks in the Archipelago, though, as is the custom in many Oriental and Latin lands, some of the stronger commercial houses with European connections do a certain amount of exchange business.

The Spanish Philippine Bank is the only one authorized to issue bank notes. According to the charter secured from the Spanish government it was authorized to issue notes to four times the amount of its paid-up capital, but many of its notes have been called in since American occupation. At the date of the report above mentioned it had outstanding $2,164,040.00 in such notes, and this constitutes the paper circulation of the Islands.

It is rather galling to American pride that it is impossible to draw a draft on the United States without having it pass through a bank belonging to some other nation. Without ships to carry freight and passengers or banks to provide exchange or banking accommodations, the wonder is that American business has increased as rapidly as it has both in China and the Philippines.

Throughout the Orient may be found branches of the two English banks first above mentioned, and they have been powerful factors in giving to Great Britain a controlling influence in the Far East. Other nations, however, have entered the field recently. Germany has banking institutions at present in most of the treaty ports of the Chinese Empire, and Russia, through the Russo-Chinese

Bank, is laying the foundation for an important part of the Pacific trade of the Orient.

It is the expressed opinion of an eminent American statesman that "a golden reward awaits the genius of finance who shall establish in the Orient an American financial institution of magnitude and money power to match the magnitude and power of the American nation, and which shall be equal to the commanding commercial position to which the American people aspire in the Far East."

"The methods of banking in the East are crude and, one is almost tempted to say, dishonest. A bank discounts its own notes between two ports, estimating the amount of the discount by the cost required in transporting that exact amount of specie separately and by itself between those two ports. That is, if you present a note issued by a banking corporation at Hongkong to its branch at Tien-Tsin, it will not be redeemed at its face value, but at a rate measured by the cost of transferring that amount of silver taken by itself between those two points. The system of issuing notes of exchange is unscientific and chaotic, and at every point the bank cuts a profit for itself. Like Russian banks in Russia, they go into every conceivable transaction—shaving always and everywhere. They therefore are not conducted on the broad lines of modern scientific methods, but upon the small and antiquated lines of immediate dividends to their stockholders. An

American bank equal to the task should be established which would put American inventiveness at work upon the great task of establishing a uniform currency, at least among the treaty ports. Experience would soon show the Chinese merchant and dealer everywhere the unquestioned value of its notes, and a common circulating medium would thus be established whose influence in facilitating trade would be quite beyond calculation or even belief. This, then, is the second need for the permanent increase of American trade in the Orient."[1]

What has been so well said by Senator Beveridge of the Orient as a whole, applies at present equally to the Philippines, with the comforting difference that American capitalists have not been slow to see the opportunities there offered, and only await the action of Congress to give them a legal status in the Islands, and they will be on the ground with abundant capital and ready to introduce American methods for the transaction of the business already awaiting their arrival. The fiscal affairs of the Philippine government alone, which would naturally gravitate to American banks properly organized and conducted, is a business of no small importance.

The need for some system of mortgage or agricultural banks has been discussed by the Philippine Commission, and the Commission has but echoed the sentiments heard during its journey about the Islands for the purpose of establishing civil provincial governments.

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[1] Winning the Markets of the Orient, by Senator Albert J. Beveridge.

The financial ability of the planters has suffered from the disorders of the past five years, the plague of grasshoppers, and the rinderpest which has carried off so many of the cattle. Interest on agricultural loans is now excessively high. Small lenders charge as high as 25 percent per annum, and in some cases the interest with commissions and charges approaches the almost incredible limit of 40 percent. A large corporation in Negros nominally charges 25 percent, but in effect collects from 30 to 40 percent upon the value of the amount loaned, by requiring that the crop of the borrower shall be delivered at a price fixed by the company, that the purchase of supplies shall be made from its stores, and that other operations connected with the marketing of the crop shall be conducted under its charge and at its profit. It is obvious that under favorable conditions a rich field lies open here for the loan of American capital at rates which will greatly relieve the present condition of borrowers in the Philippines and yet afford profits far in excess of those which are usually earned in enterprises in the United States.

There is a certain amount of risk involved in making mortgage loans in the Philippines because the titles to lands are not always clear and there is the risk always incident to a loan which is to be repaid from the profits of agriculture that there may be a failure of the annual crop. The former of these difficulties can to a great extent be modified by legislation which no doubt will receive the attention of the insular government in the near future. It has been suggested that commercial banks established in the Philippines be allowed to set apart a certain portion of their capital for investment in mortgage or agricultural loans, and there is but little doubt that the present conditions will be improved when American civil government gets into thorough working condition.

The Philippines is a land without a currency. The coin and paper of the United States do not circulate because it is a silver country, and the rate between the money of a gold standard country and the silver is constantly fluctuating. The country issues no coin and is at present dependent on the Mexican silver dollar, the old Spanish Filipino dollar and the silver coined in other Oriental mints. The paper of the Spanish Philippine Bank, amounting to about $2,000,000 is the entire bank note circulation for the Archipelago among a people who are not accustomed to use personal checks to any great extent, and when it is remembered that a thousand dollars in silver weighs sixty pounds avoirdupois, the inconvenience they suffer in effecting ordinary transactions is at once apparent.

There is no more important Philippine question before Congress at the present time than that of providing both coin and paper money for the Islands which will be both stable and suited to the needs of the conditions which obtain both in the Philippines and the Orient. Development waits upon investment and investment awaits the settlement of the monetary question. Its prompt and proper solution will be worth more than regiments of soldiers to complete the pacification of the Islands and win the loyal support of the people to American control.

CHAPTER IX

TRANSPORTATION AND PUBLIC WORKS

THERE is but one railway and one street car system in the Philippine Islands. An English company a few years ago built a railway from Manila to Dagupan, 196 kilometers (121¾ miles) in length. Its general direction is north through a very fertile and densely populated country, which was the scene of many of the battles between the Americans and insurgents after the surrender of Manila.

An insular territory like the Philippines does not require an extensive railway system, such as would be needed in a like amount of land in one connected body, and water transportation must be depended upon to a great extent for the circulation of passengers and freight. The islands of Luzon and Mindanao, however, are large enough to justify the building of roads into the interior, but the latter island is not sufficiently developed to make them at present a pressing necessity. Luzon, on the other hand, needs more railway facilities. It is populous, fertile and mountainous, and has always suffered from lack of suitable means of communication and has therefore suffered from that lack of community of interests which is so necessary to the formation of a true national spirit.

East of Dagupan, the northern terminus of the railroad, and separated therefrom by a range of mountains, are the upper waters of the Cagayan River, which flows in a northerly direction through a wide and fertile valley and empties into the sea at Aparri. The most evident improvement in railway communication at present is to extend the Manila and Dagupan line east through the mountains to the Cagayan valley and then down the river to the coast. The line is said to be a practical one and would place all of the island north of Manila in direct communication with the capital. It would also afford the people living in the low coast region at Manila and other places an easy means of reaching the high lands and salubrious climate of the interior, where it is proposed to establish a health resort so that the soldiers and civilians in the employ of the government could recuperate without going to the expense of a long sea voyage. The fertility of the soil, the amount of freight in sight, the density of the population all invite the construction of the road, although the plan has not yet taken definite shape.

As stated, there is but one street railway line in the Archipelago, and that is at Manila, a poor horse line, which, according to the temper of the patron excites risibility or anger whenever it becomes necessary to use it. It is antiquated, badly managed and valuable only for the franchise it possesses. Its entire equipment will have to be replaced before it can be of any benefit either to its owners or to the city. American capitalists are endeavoring to secure the line for the purpose of extending the system to all parts of the city and to the more important suburbs, and should the transfer be made, it is the purpose of the new company to lay nearly forty miles of track and substitute electricity for horse-power.

The climate of Manila is such that riding about the city is a necessity. Even the poorest laborers spend a good part of their low wages in transportation. Carriage building is an important industry at Manila, for the demand is enormous. Almost everybody must have his *carromata* or *quilis,* and oftentimes the streets are blocked with vehicles, and neither the native coachman nor horses are noted for serenity of temper. Most of the vehicles are simply for use, but the wealthier mestizos excel in the luxury of their carriages. The rebuilding of the street car line and its operation according to modern methods will do much to relieve the congested condition of the streets and would enable many government employes and those in private business to dispense with their horses and coachmen to the material reduction of their necessary expenses. It would also enable many persons who are now paying high rents and living in the crowded city to go to the suburbs, where rents are lower and where sanitary conditions are much better than in town. Some of the Manila suburbs are very pleasant and only require transportation facilities to make them sought after.

Communication between the different islands and cities of the Archipelago must be chiefly by water. The interisland trade, as it is usually called, is very important and some attention has been given since American occupation to its improvement. In addition to the vessels formerly employed in this service, an American firm has recently sent to the Philippines a fleet of nineteen vessels for the purpose of engaging in a general lighterage business and also in the interisland trade. This has been made possible because the new tariff has removed the duty on sea-going vessels which formerly was enforced by the provisions of the Spanish tariff, recognizing that quick communication, the prompt handling of freight and lower transportation charges were more important than the few thousand dollars collected in the way of duties from vessels brought to the Philippines.

The open ports of the Philippines are Manila, Iloilo, Cebu, Jolo, Siassi and Zamboanga, and the freight of the Islands which originates at other ports must be transferred to one of those above mentioned for export, and in like manner the imports must first be entered at one of the above-named places and from thence can be sent by coasting vessels to the point of consumption.

The harbors of the Philippines, as a rule, are shallow. Even in that of Manila all vessels drawing over sixteen feet of water are obliged to transfer freight to lighters at no little risk and expense. Storms frequently interrupt business altogether, especially during the season of typhoons, and great damage is often caused to the unprotected shipping. The burden thus imposed upon commerce is great. The freight rates between Manila and Hongkong, a distance of about 700 miles, is as much as, and sometimes more than, between San Francisco and Hongkong, a distance of about 8000 miles.

The importance and necessity of improvements in the Manila harbor were recognized by the Spanish government, and more than twenty years ago it formulated an elaborate plan for the improvement of the harbor and had completed about 30 percent of the work prior to American occupation. Those plans, after careful examination, have been substantially approved and the Philippine Commission made an appropriation amounting to $2,000,000 for the purpose of completing the same. The plans call for the completion of the partially finished breakwater, the improvement of the canal connecting the harbor made by the breakwater with the Pasig River, the improvement of that stream below the Bridge of Spain and the removal of the bar at the mouth of the river. These improvements also call for a railroad and wagon drawbridge across the Pasig and the deepening of the river channel above the Bridge of

Spain to Laguna de Bay. The work, after due advertising, was awarded to an American company, which is rapidly pushing it to conclusion. This has required the purchase of much material in the United States. Hydraulic dredges, scows, derricks, piledrivers and hoisting engines have been purchased and are now at work under the skilled direction of American workmen. It is estimated that the work will be concluded in about three years and then the Manila harbor will allow deep ocean-going vessels to tie up and unload at the wharves, doing away entirely with the expense of lightering.

Nearly every account hitherto published about the Philippines dwells upon the wretched condition of the roads, or rather the absence of roads, which practically prevents internal commerce except that which lies within easy reach of navigable waters. The Philippine Commission therefore appropriated the sum of $2,000,000 (Mexican) to be expended in the construction of highways and bridges. Road construction in the tropics is no slight task, for the luxuriant vegetation must be constantly fought and the torrential rains completely obliterate works which in more temperate climates would stand the test of years. The very fact that the Islands are not large enough to justify extensive railway systems, makes the construction of wagon roads from the interior to the coast the more necessary in order to open up the entire country to cultivation. Both the harbor works and the road construction have been placed in charge of the United States Corps of Engineers, which insures that it will be thoroughly done, and during the year 1901 over 800 miles of road were constructed.

A cold-storage and ice plant, ample to supply both the needs of the army and the civilians in Manila who are accustomed to the use of ice, has been constructed at an expense of about $700,000. Two market houses in the city of Manila have been built and two others are under course of construction. The Bridge of Spain has been widened, the erection of the Santa Cruz bridge has been commenced, repairs to the Ayala bridge have been undertaken, and all of the small bridges in Manila, of which there are a great many, have either been practically rebuilt or extensively repaired. Two crematories for the disposal of garbage have been erected in Manila and an appropriation has been made for the erection of the third one in that city. A new building for the customs officers has been erected, and new warehouses, affording additional storage space for about 13,000 tons, have been built. About 472 cubic meters of cut stone have been utilized in the extension of the Luneta sea wall.

Under the anomalous conditions encountered by the government at Manila it soon became evident that the establishment of a government printing plant in that city would be more economical and more satisfactory than anything which could be accomplished by contract with private establishments. The Philippine Commission therefore appropriated $200,000 for this purpose, a competent superintendent was secured from the Government Printing Office in Washington, and after due advertising for competitive bids, a complete plant was obtained in the United States and sent to Manila. This plant includes the necessary presses, operating machinery, type, book-binding, stereotyping, electrotyping, photo-engraving and type-setting machinery. The entire establishment is modern in every sense of the word, manned by skilled American operatives, and in itself will be a revelation to the people of the Orient of the progress of America in the art preservative. It is the object of the government to employ Americans as teachers of the natives, and as the latter become efficient they will be given employment in the office, subject always to the rules and regulations of the civil service law.

The wonderful trade and beautiful cities built up both at Hongkong and Singapore by the British are due in a great measure to the splendid harbor works which at great expense have been constructed at those ports. Commerce will follow along the lines of least resistance, and those places which afford the best facilities for handling freight are the places that will capture and hold the trade of the nations. Ocean highways have been built by nature, but man must devote his talents to providing terminals.

When the time comes when the chief ports of the Philippines—Manila, Iloilo and Cebu—can afford protection and wharfage to the commerce of the Orient, a marked change for the better will be wrought in the commerce of the country.

As has been stated there is no direct steamship line plying between the United States and the Philippines, and aside from government transports, goods and passengers going between these lands must depend upon German, English or Japanese lines. This condition should not be allowed to continue, but the amount of freight is so far beyond the present capacity of the American merchant marine that it was necessary by an act of Congress to allow foreign vessels to engage both in the interisland trade and in the trade between the Islands and the United States. This provision remains in force until July 1, 1904, by which time it is hoped that domestic vessels may be able to care for the insular carrying trade, and indeed become known in ports that for a long time have not seen the American flag floating from the masthead of a commercial steamship.

The navy is building and equipping an extensive station at Cavite at which vessels in the Asiatic squadron can be repaired in docks belonging to their own government, an advantage of no little importance in view of present conditions of international interests in the Orient.

The charting of the Philippine coasts and harbors is being performed under the direction of United States officers, and this will give increased security to all shipping interests, while the signal corps has connected the different islands with cables and the chief towns with telegraph lines, so that now uninterrupted communications are maintained throughout the Archipelago, and this work is an important factor both in preserving the peace and stimulating the growth of commerce. The whole territory has been put in touch with the entire world.

The subject of a Pacific cable scarcely comes within the limits of this work, and yet when it is remembered that every message passing between Washington and Manila must be "relayed" eighteen times, being handled by operators of many different nationalities and speaking as many different languages, it becomes an important matter. Messages go from Manila to Hongkong; thence to Labuan, Borneo; thence to Singapore, Malay Peninsula; thence to Penang; thence to Madras; thence to Bombay; thence to Aden, Arabia; thence to Suez; thence to Port Said; thence to Alexandria, Egypt; thence to Malta; thence to Morocco; thence to Tangier; thence to Lisbon, Portugal; thence to Penzance; thence to Valentia, Irish coast; thence to Nova Scotia; thence to Canso, thence to New York, and from there to

Washington. This long slender thread touches Asia, Africa, Europe and Canada, and in time of war with any of the powers along its line might become entirely unreliable.

No argument is needed to show that both for commercial and military purposes a cable is needed from the Pacific coast that would touch at Hawaii, Guam and the Philippines, thus making an all-American line and bringing Manila much closer to the seat of government than was Pittsburg sixty years ago.

All of these enterprises, both under construction and proposed, will call for a considerable number of skilled employees, and the Islands are not yet in position to afford the needed help. Until industrial and technical schools educate a native personnel, the United States must furnish the brain and brawn, and the Americans who undertake the work of development will be expected not only to do efficient work, but also to prepare natives to take their places in time, so that the local administration of the various public works will be to a great extent in the hands of the citizens of the Archipelago.

CHAPTER X

PROFESSIONAL AND TECHNICAL SKILL IN DEMAND

THE WONDERFUL natural resources and richness of the Philippines have been frequently pictured both by travelers and in the many government reports that have been issued since American occupation. There is no adverse testimony on this subject. Nature has done everything but man has accomplished very little. The field is inviting, but it is in a virgin state. In spite of the fact that the Islands have three hundred years of history, their progress has been less than that obtained in many of the American states in as many decades. The people are just emerging from a revolution which followed a long period of sullen restlessness under Spanish control, which was not conducive to the development of the natural resources of the country. Most of the people are poor, have had but little encouragement to struggle to better their condition, and are not very industrious in their habits.

The most natural development, and that which must precede others will be in the line of improved methods of agriculture, and when homestead laws have been enacted it is hoped that new life and energy will be imparted to the rural activities of the Islands. The consciousness that his title to his fields is indisputable, and that the government will protect him in his rights cannot but stimulate the farmer to improve his property and labor to draw from it a larger increase. Contact with foreigners and improved educational facilities for his children will create new wants, and these wants will increase his industry, and there will be a gradual uplifting of the plan of living that will redound to the benefit of the entire Archipelago.

The opportunities, however, for Americans seeking occupation or fortune in the Philippines are not at present the same in those Islands as they were a few years ago in the great new west of the United States. The difference in climate, the unusual crops, the foreign languages, the strange people, and the entire environment would be so different that it would take a bold American to venture to build a home on a piece of virgin Philippine land, unless a colony were formed which could take in a great measure its own customs and institutions along, and then the venture would be a hazardous one. Rural life in the Philippines is for the planter who can command capital, comforts and labor. The cities on the other hand are, as in all lands, more cosmopolitan, and it is there that the strongest American tinge will be given to the habits and customs of the country. The civil employees of the government as a rule of course will reside in the cities. The companies which may be organized for the purpose of utilizing the resources of the country will have their offices in the cities; the professions will be largely practiced in the more important towns.

Opportunities for professional men are not lacking in the Philippines. The practice of law, for example, will afford many openings for the young man of talent. The questions of law upon which title to land in the Philippines rests must become a fruitful source of litigation, as no survey has ever been made of the lands in the Islands, and to clouded titles is added the vexed question of boundaries. It appears to be the purpose at the present time of the government to purchase what are usually denominated the Friar lands, and to sell the same in small parcels to their present tenants or others at a price that will cover the cost and interest on the bonds to be issued in the event of a purchase, and before all questions relating thereto are disposed of recourse will no doubt be had to litigation. Even in the case of lands in private ownership difficulty may be encountered in establishing boundaries and clear titles, as the records of transfers do not seem to have been kept with the accuracy that the importance of the subject required.

Old mining claims will conflict with new claims entered since American occupation and the rights of ownership no doubt will have to be decided at times by the courts. The companies already formed and those about to be organized will need legal direction and protection, and thus it is not difficult to see that attorneys will be in demand.

The courts have been reorganized. One of the blights that rested upon the Islands was the belief that there was a lack of integrity on the part of the courts that militated against the administration of justice, and the Spanish language has many proverbs counseling against appealing to the law for the settlement of disputes. Legal processes were formerly so long that suits at law often became legacies handed down from generation to generation. This has been changed. The civil and criminal codes have been modified and the methods of procedure have been changed so that an appeal to the courts may be made with confidence in a just cause. Able jurists from the United States have been appointed irrespective of political influence to serve as judges on the supreme bench and in the Audiencias or lower courts. The practice before the courts has been carried on hitherto in Spanish, though English has now been officially recognized and will henceforth be substituted gradually in court proceedings. However, as all the records of the Islands, and the history of all cases hitherto prosecuted, the archives of the government, the registry of property are all in the Spanish language, as it was the one common language of that mixed population, as well as being the language of commerce, the attorney with ambition to succeed and master the cases likely to fall to his lot, should acquaint himself with that tongue. All royal orders, decrees, grants, and in short the whole basis of the civil administration of the Philippines is in Spanish, and whatever may be the language of the future, and however much Americanized the courts may become, the root of all rights will run back to a Spanish source, and the advocate who does not master that tongue must be at the mercy of a translator and depend on his fidelity.

The medical profession also affords opportunity for good men. The native physician, however faithful he may have been in the study of his profession, has been handicapped by the fact that neither the best standard nor modern text-books are to be found in the Spanish language, and as a rule the physicians in Spanish-speaking countries have been obliged to acquire their technical knowledge through French books, which of course are thoroughly up to date, but the acquisition of professional knowledge through the medium of a foreign tongue, save for a few specially gifted students, is a laborious process, not always attended with the best results. The natives also seem to prefer a foreign physician, and this fact often admits him to bedsides where one might expect to find a native practitioner. The American colony would naturally look for a physician of their own tongue in time of illness.

The field of original research in biology, bacteriology and tropical diseases is an interesting one and needs but to be mentioned. American physicians at Manila may in the future make discoveries in the treatment of those diseases which have their origin in the Orient that will compare with the work of American physicians in Cuba, who appear to have banished yellow fever from that island and to have made Havana one of the healthy cities of the world. It is a noble but herculean task to labor among ignorant Orientals and to make them live in a more hygienic manner than that to which they have been accustomed, and teach them to avoid the more fruitful causes of disease.

In the field of theology, the churches of the United States have not been slow to act. Most of the larger denominations have sent representatives to the Islands for the purpose of building up their churches both from American and native sources. There are also non-Christian and Moro tribes to whom the gospel has never been preached in any form, and as they are now in a very real sense the wards of the nation, the church will no doubt send teachers, physicians and missionaries among them. There will now be the same freedom of worship in the Philippines that obtains in the United States which will no doubt contribute to the improvement of conditions and stimulate the religious life of the people.

As already stated, the larger business houses of the Philippines are conducted by Europeans—Spanish, English and Germans—whose advent antedates by many years the arrival of the Americans, and they have such a hold that it will be no easy task to displace them or for American firms to secure a fair portion of the trade, and yet there is room for growth. Complaint has been made that the merchants sell largely from samples, carrying but a limited supply of goods in stock, and that often after an order is placed the merchant is obliged to send to Europe for the goods wanted. Such methods cannot survive in the face of the competition of establishments with capital adequate to carry a general line of goods in quantities sufficient to meet all ordinary demands.

With the establishment of American banks, American lines of steamers, and the introduction of a satisfactory currency system, there is little doubt that strong commercial houses will be started to do both an import and an export business to the decided advantage of the consumer, and that they will stimulate the introduction of American goods into the Islands.

The smaller retail trade in the towns and villages is to a great extent in the hands of the Chinese, who are the retail merchants of the Orient, and it would be a difficult matter to compete with them on their own ground. They have the reputation not only in China, but all over the East of being the shrewdest traders in the world. They penetrate into the wilderness along the streams of Mindanao, Borneo and the Malay Peninsula and traffic with the savages, exchanging gewgaws for rubber, gutta-percha, and other forest products. It is doubtful whether it will be possible to supplant them in the Philippines.

Manufacturing, save in a few special lines, has not been developed to any great extent in the Philippines, because fuel has always been very expensive, and the duty on machinery has in the past been almost prohibitive. There is no doubt that under the new regime more will be done than has been accomplished in the past in this direction, though development will be slow.

There are opportunities in many lines for skilled labor and technical ability within the gift of the Philippine government, and these are bestowed irrespective of political influence as a result of satisfactory civil service examinations. Aside from employment under the government, there are positions to be filled with private companies and firms; bookkeepers, stenographers, typewriters, machinists and skilled artisans in many lines and trades will be needed to man and carry forward the many enterprises that will soon be undertaken by capitalists. Opportunities that at present cannot be foreseen by the most careful investigation will doubtless occur, but of them it is impossible to speak. A great rich state lies here under tropic skies awaiting the magic touch of brain, money and skill in order to contribute to the wealth and comfort of the world. Fortunes await many who seize and master the situation, and disappointment and failure will be the lot of some as is the case in all lands.

The question of going to the Philippines in quest of place or fortune is one of such importance that positive advice cannot be given. The prudent man will acquire all available information, then take stock of his own ability and inclination, and then decide the matter for himself. A mind that will allow others to decide this important matter for him is one that does not give great promise of success. A young man in the Philippines, as elsewhere, must be the architect of his own fortune. The conditions of life are so different that peculiar adaptability is necessary both for comfort and success. A certain amount of self-sacrifice will have to be practiced, certain chances must be taken, and yet an alert mind, ready to seize opportunity will have unusually good opportunities to carve the way to a competence, if not to fortune.

The poor man without a useful trade cannot hope to compete in that climate with the native or Chinese laborers, whose mode of living is adjusted to a much lower key than that of the average American, and the man who goes to the Philippines without a definite purpose, hoping that something will turn up, will make a serious mistake. He must go determined and prepared to turn up something or it will be better for him to remain in the United States.

Most of the business openings offered in these new eastern possessions, be they in hemp, sugar, contracting, banking or transportation, require capital and skilled direction. Competition will be keen and constant. Old institutions already established are acquainted with the territory, know the people, have met and conquered the difficulties that surround them, and if somewhat conservative from an American point of view, have perhaps done as well as others would have done under the same conditions.

A few years ago practically nothing was known about the Philippines. They formed no part of the world's thought. At school the pupil learned of their existence in his geography and straightway proceeded to forget them. There was but little information obtainable about the resources or conditions which obtained in that distant land. Suddenly at the sound of Dewey's guns, interest awoke. Everybody wanted to know all that could be learned about the Archipelago. The War Department, through which the Islands have been governed, has spared no pains to gather, systematize, and distribute information. The Division of Insular Affairs, under the efficient direction of Colonel Clarence R. Edwards, who fought with the lamented Lawton in Luzon, has taken pains to give the widest possible publicity to all matters relating to these new possessions, and to-day there are but few distant places better known.

The future of the Philippines presents serious problems, but the American optimism that has never hesitated at any difficulty will not turn back from this tropical venture, thrust upon the nation by the evolution of recent history. National pride is at stake, and national ability is to be put to a new test. It is an encouraging fact that those who are charged with the administration of the Islands, while recognizing even better than their critics the difficulties of the situation, have no doubt as to the ultimate results. Those race characteristics that conquered a continent in a century will be able to do more for the Philippines than can be imagined at the present time.

The policy pursued in the Philippines is something new in the history of national growth or in the treatment of dependent possessions. The Islands were acquired not for the purpose of increasing the national revenues. There is no thought of calling upon them to contribute to the support of any government save their own, and their receipts are wisely administered for the purpose of elevating their own people to a higher plane of living and preparing them for the difficult task of self-government.

OPPORTUNITIES IN CUBA

INTRODUCTION.

The subject of existing commercial opportunities in a practically undeveloped island like Cuba is of undoubted importance to the American people, especially as the island lies so near the doors of our own country. Since the hour when circumstances made war with Spain probable, attention has been drawn to Cuba, and the press, both at home and abroad, has given considerable space to all phases of Cuban matters.

There have been histories, not altogether historically correct, and descriptions of methods and manners of living not entirely accurate, and from these many erroneous impressions of actual conditions have been created.

Therefore, it is with a feeling of genuine pleasure that I express my approval of the article on opportunities in Cuba prepared by Mr. Perfecto Lacoste as an exact and conservative description of actual conditions in the island.

Mr. Lacoste's experience as Mayor of Havana, and as Secretary of Agriculture of Cuba, has made him thoroughly conversant with the economic conditions of the island, and he writes from a personal knowledge of his subject. I, therefore, commend his statements to the reader as entirely conservative and reliable.

The needs of Cuba to-day in the direction of foreign commercial assistance are many. The peculiar situation created by the late war and the temporary occupation of the island by the United States will give an impetus to many trades and professions. Especially is this true of agricultural pursuits. Cuba's advantageous location on the edge of the tropics renders her soil peculiarly susceptible to the growth of fruits and small vegetables. There are chances for the farmer, not only in these products, but also in the main staples, such as sugar, tobacco and coffee.

There are opportunities in many other directions, and, in my opinion, the earnest attention, which undoubtedly will be drawn to the island by this book, will be of incalculable benefit not only to Cuba, but also to the world at large.

Leonard Wood

Former Governor-General of Cuba.

OPPORTUNITIES IN CUBA

By the Hon. PERFECTO LACOSTE,

Former Mayor of Havana and Secretary of Agriculture of Cuba.

CHAPTER I.

Cuba.

CUBA, the most populous of the West India islands, lies directly south of Florida. Havana is a trifle west of south of Key West and is distant from it, as the crow flies, about 100 miles, being separated from it by the Straits of Florida.

Cuba is included between the meridians of 74 degrees and 85 degrees west of Greenwich and between the parallels of 19 degrees 40 minutes and 23 degrees 33 minutes. Its length from Cape Maysi on the east to Cape San Antonio on the west is 730 miles. Its breadth differs greatly in different parts, ranging from 100 miles in the east, in the province of Santiago, to 25 miles in the neighborhood of Havana. Its area, which is more fully discussed elsewhere, may be set down as 43,000 square miles, including the Isle of Pines and the keys. It is, therefore, a little larger than the State of Virginia and somewhat smaller than Pennsylvania.

The north coast is, for the most part, bluff and rocky, and in the provinces of Matanzas, Santa Clara and Puerto Principe is bordered by lines of islands and reefs of coral formation, the passages through which are extremely intricate and difficult. These islands are low, are in the main covered with mangrove forests, and contain few inhabitants.

The coast is low in the western part of the island, the bluffs ranging about 100 feet in height in Pinar del Rio and rising gradually eastward. About Matanzas they reach 500 feet in altitude. In Santa Clara and Puerto Principe they are lower, but in Santiago the coast is abrupt and rugged, almost mountainous, rising in a succession of terraces.

The south coast from Cape Maysi to Cape Cruz is mountainous. Indeed, from Santiago westward to Cape Cruz, the Sierra Maestra rises abruptly from the water to altitudes of several thousand feet. The shores of the Gulf of Buena Esperanza, into which flows the Rio Cauto, are low, and from this place westward, excepting a short stretch between Trinidad and Cienfuegos, the coast is low and marshy as far as Cape San Antonio, the westernmost point of the island. This coast strip of marsh is, in the main, narrow, but west of Cienfuegos it broadens into a great expanse, forming the Zapata Swamp, an almost impenetrable region, 75 miles in length, with a maximum breadth of fully 30 miles, clothed with the densest vegetation and teeming with tropical life.

Off the south shore are hundreds of low, marshy, mangrove-covered islands and islets.

Most of the harbors on both coasts are of peculiar shape, resembling nothing so much as pouches, with narrow, often sinuous, entrances, opening within into broad expanses completely sheltered. This is the character of the harbors of Havana, Santiago, Cienfuegos, Guantanamo, and many others less known.

The middle portion of the island, including the provinces of Havana, Matanzas, Santa Clara and Puerto Principe, presents little relief, but consists in the main of broad, undulating plains and shallow valleys, the land rising only in a few places to any considerable altitude. It is only at the two extremes of the island, in the provinces of Pinar del Rio on the west and Santiago on the east, that the island presents any considerable or well-defined relief features. Throughout Pinar del Rio there runs a range of hills, a little north of the middle line of the province and closely paralleling in direction the northern coast. This range, which is fairly well defined, is known as the Cordillera de los Organos, or Organ Mountains, and rises in many places to altitudes exceeding 2,000 feet, culminating in Pan de Guagaibon, having an altitude of 2,500 feet. From the crest of this range the land descends northward and southward to the coast in long, undulating slopes, the southward slopes forming the celebrated tobacco lands known as Vuelta Abajo.

The central provinces of Cuba—Havana, Matanzas, Santa Clara and Puerto Principe—consist mainly of broadly rolling plains with shallow stream valleys. In Havana, Matanzas and Santa Clara these plains are, or were prior to the late revolution, in a high state of cultivation, while in Puerto Principe they are, in the main, used for the grazing of cattle. The Valley of the Yumuri, in Matanzas, is a type of the beautiful, highly cultivated region of this part of the island.

In the southern part of the province of Santa Clara is a group of rounded hills, occupying an area between Cienfuegos, Trinidad, and Sancti Spiritus. The highest of these, Potrerillo, has an altitude of 2,900 feet. Among these hills are many beautiful valleys.

Santiago, at the other end of the island, is a province presenting great relief. Its surface is extremely broken, with high, sharp mountain ranges, broad plateaus of considerable elevation, and deep valleys—some of them broad, others narrow and resembling canyons. The dominating orographic feature of the province—indeed, of the whole island—is the Sierra Maestra, which, commencing at Cape Cruz, south of Manzanillo, extends eastward, closely paralleling the coast, from which it rises abruptly, as far east as the neighborhood of Santiago. In this part it contains many points exceeding 5,000 feet in altitude, and culminates in Pico Turquino, which is reputed to have an altitude of 8,320 feet. From Santiago it extends to the east end of the island, but is much more broken and has more of a plateau-like form, with a great diminution in altitude. This portion of the range takes on a different name, being known as the Cobre Range. It contains numerous flat summits, approximating 3,000 feet in altitude, one of which, known as La Gran Piedra, is said to have an altitude of 3,300 feet.

North of Sierra Maestra lies the broad and fertile valley of the Rio Cauto, beyond which the country rises gradually to a high plateau occupying the interior of the province, with a summit elevation of 1,000 feet or more, on which stands the city of Holguin. The eastern part of the province consists of a maze of broken hills, with altitudes ranging from 1,000 to 2,000 feet, in which are many small and fertile valleys.

The rivers of Cuba, though numerous, are short, and few of them are of any importance for navigation. The largest stream is the Rio Cauto, which heads in the interior of Santiago province and in the north slopes of Sierra Maestra, and flows westward through a broad valley to its mouth in the Gulf of Buena Esperanza, after a course of about 150 miles. This stream is navigable for light-draft boats to Cauto Embarcadero, about 50 miles above its mouth.

Several other streams are navigable for a few miles above their mouths, but in most cases only through what may be regarded as estuaries.

The climate of Cuba is comparatively simple in its character and can be briefly described. With the long, narrow shape of the island, its great extent of coast line and small breadth, it has in the main an insular climate with a high mean temperature, slight extremes of temperature, great humidity of the atmosphere, and an ample rainfall.

At Havana, on the north coast, the mean annual temperature is 77 degrees. The range of temperature between the mean of the hottest month and that of the coldest month is from 82 degrees to 71 degrees, or only 11 degrees. The highest temperature on record in Havana is 100.6 degrees, and the lowest 49.6 degrees. This maximum recorded temperature is no higher than in northern cities of the United States, but the duration of high temperatures is much greater in Cuba and explains the high mean temperature. But, notwithstanding the long-continued high temperature, the climate of the northern part of the island is tempered by the trade winds, which blow with but little variation throughout the year, and the nights in both summer and winter are cool.

The mean annual temperature at Havana fairly represents that of the island, it being, perhaps, a little hotter upon the south coast and inland than upon the north coast. The range of temperature between summer and winter does not differ, probably, materially anywhere on the coast from that at Havana, but inland it is probably a little greater. The mean relative humidity at Havana averages about 75 per cent. and remains tolerably uniform at all times of the year. Inland the humidity becomes somewhat less, but not decidedly so.

The mean annual rainfall at Havana, derived from observations of many years, is 52 inches. The record shows, in different years, a rainfall ranging from 40 to 71 inches. This represents very closely the rainfall upon the north coast of the island. Inland and upon the south coast it is probably somewhat less, although observations are lacking. This is decidedly less than upon the Gulf Coast of the United States and but little greater than that of the northern seaboard cities. As regards the distribution of rainfall through the year, there is a wet and a dry season, the former being from May to October, during which time about two-thirds of the precipitation of the year is received. Rain falls during about one-third of the days during each year, although this does not represent by any means the proportional amount of rainy weather. The days are usually clear up to about 10 o'clock, from which time till night, during the rainy season, it is frequently showery. The nights are commonly clear. Thunderstorms are frequent, but not violent.

The prevailing winds throughout the island are the northeast trades, which blow with great persistency, but seldom with violence. The island is occasionally, though not frequently, visited by hurricanes. These break upon the coast, causing the maximum destruction in its neighborhood, and rapidly lose their force and violence as they proceed inland.

In winter, when the trade winds extend farthest to the southward, the island not infrequently comes within the influence of "northers," from the north temperate zone, greatly and suddenly reducing the temperature on the north coast. These occur during the winter months and follow the severe storms of the United States, when the temperature sometimes falls as low as 50 degrees, causing much suffering, as very little provision is made against cold in the construction of Cuban houses.

Throughout Cuba game is abundant; deer, though not native, have flourished and multiplied greatly. Rabbits are also plentiful. The wild boar, so called, the wild dog, and the wild cat are simply domestic animals run wild. They are quite numerous in all parts of the island. Wild fowl, especially ducks and pigeons, abound, the former crossing from the Southern States during the winter season, while the latter remain on the island the year around. Pheasants, quail, snipe, wild turkeys, and guinea fowl are also numerous, with several varieties of game birds, such as the perdiz, tojosas, rabiches, and the guanaros.

The only distinctively native animal is the jutia, or hutia, ratlike in appearance, and black, which grows to a length of sixteen or eighteen inches, not including the tail. While eatable it is not especially palatable.

Cuba has more than 200 species of native birds, including those already mentioned as game birds, many possessing the most beautiful plumage, but birds of song are rare.

In swampy localities crocodiles and American alligators (caimans) are found, and although these frequently grow to an enormous size, but little attention is paid to them by the natives.

Chameleons, small lizards, tree toads, and similar harmless silurians of diminutive size are very common, while occasionally the iguana and other large varieties of the lizard species are seen.

Few varieties of snakes exist in Cuba. One of these, the maja, from ten to fourteen feet in length, is a semi-domesticated reptile, if such a term may be used, for it is most frequently found about the huts, farmhouses and small villages, its favorite living place being in the palm-leaf thatches of the older buildings, while its favorite food is poultry. Another snake, named the juba, is more vicious in disposition than the maja, although never reaching more than one-third its size. It is not poisonous. The other varieties are still smaller in size, are seldom seen, and are not venomous.

Though Cuba has been settled for nearly four hundred years, it is essentially an undeveloped country. While agriculture is almost the sole industry, but three per cent. of the area is under cultivation. Only two per cent. is systematically cultivated for export crops. Land values are correspondingly low. In some sections fertile tracts can be purchased for the price of government lands in the United States. Portions of the island are sparsely settled. Puerto Principe, with an area of fertile plains nearly one-fourth that of the State of Pennsylvania, has a rural population of only six persons to a square mile, or a little over one family to a section.

The agricultural possibilities of Cuba, exhaustively treated in another chapter, are unsurpassed by any other region of the globe. Sugar cane will grow as in no other part of the world. It grows to a height of fifteen feet, and the stalks are from three to six inches in diameter, containing a very high percentage of saccharine matter. A plantation of sugar cane on these virgin lands does not need to be replanted for from ten to fifteen years. Cuba is famous for its tobacco. It is more sought for and commands a higher price than any other tobacco in the world. There is never lacking a market for Cuban tobacco. Two crops, and often three, a year are taken from one planting, and the yearly profit is often $1,000 per acre. Coffee raising is an industry to which very little attention is given in Cuba, and yet Cuban coffee is unexcelled in quality, and can be made a most profitable crop.

Every fruit (except apples) that will grow in any land will grow in Cuba. Pineapples grown in Cuba are acknowledged the finest in the world; they attain a size of from three to seven and one-half pounds, and will grow upon the savanas, where, outside of Cuba, no marketable fruit will grow. Lemons, limes, and oranges grow wild and can be greatly improved upon cultivation. Cacao, the source of chocolate, cocoa, and broma, grows luxuriantly, and will prove a most profitable industry.

The banana will bear the first year and need not be replanted for ten years. Cocoanut groves yield handsome returns under cultivation. Grapefruit, mangoes, small fruits of all kinds, all kinds of vegetables, cotton, corn, and rice are products of Cuban soil. Copal, campeachy (logwood) and rattan are valuable products and very abundant. Mining industries are just commencing and will take a prominent place among the resources of the island. The first manganese and asphalt mines were opened after the American occupation and now export $500,000 worth of product annually. Sugar mills, saw mills, and tobacco factories comprise the chief manufacturing industries, but there are vast possibilities for various enterprises as the country develops.

Means of transportation and intercommunication are receiving prominent attention. Cuba, with nearly the area of New York State, has only a thousand miles of railway, but, as described elsewhere, the railway situation is improving. With sixteen cities of over 8,000 population, only two—Havana and one of its suburbs—have electric railway lines.

That these conditions will change rapidly under a new government and freer trade relations with the United States can hardly be doubted. There are already evidences of this. American banking facilities, established since the occupation, are to be found in all the large cities.

At present, three-fourths of the population of Cuba reside in the four western provinces, which constitute less than one-half its area. It is almost certain that there will be some redistribution of this population and a considerable immigration as labor markets are created in the territory opened for development by the Cuba Company's Railway, recently completed, which runs from Havana to Santiago through the centre of the island. Besides the demand of the road itself for local supplies, there will be a market among settlers for building materials and machinery. American enterprises will follow the road as rapidly as it is opened to traffic.

CITIES.

Havana, the self-named "Key of the New World," is a world-city, cosmopolitan and broad beyond general acceptance. It lies on a peninsula, at the narrowest part of the island, fronting a magnificent harbor. Here, in the midst of a population of over one quarter of a million, is the seat of government and the centre of all kinds of interest. Havana is considered a strongly fortified point, and the gloomy fortress of Morro Castle, with its various attendant batteries, looks sufficiently formidable. The old town contains narrow and gloomy streets, but in the newer portions are many impressive avenues.

The government palace, residence of the President of the republic, is here, also many statues and parks, theatres and clubs, which would be a credit to any city. There are a number of educational institutions of every degree. Tempting markets, galleries, museums, noble private residences, all combine to make Havana a stately metropolis and delightful to the eyes of the impressionable stranger.

The second city of Cuba, Santiago, founded by Velasquez in 1514, is situated on beautiful Santiago Bay, in the southeastern part of the island. There are two routes from Havana—either by coastwise steamer or by rail. In winter the temperature of Santiago is 82 degrees; in summer, 88 degrees. Iron ore is the great export, but sugar, hides, cedar, tobacco, wax, mahogany and manganese are also shipped. American capital owns three large mining plants at Santiago.

Seventy miles east of Havana lies Matanzas—also on a lovely bay of its own name. It is cut into three parts by rivers, one of them deep enough to float lighters and barges. Its population of 57,000 claim the healthiest city of the island, and that the climate is the finest in this land of fine climates. With improved sanitation Matanzas would be ideal from a tropical point of view. Rum distilleries, sugar refineries, car and machine shops, and guava jelly factories are the chief industrial establishments of the community.

On the Bay of Iagua, which draws twenty-seven feet of water (fifteen feet at the wharves), six miles inland, is Cienfuegos, connected by rail with Havana, less than 200 miles away. It is on the south coast. Tobacco and sugar are exported, and ice and soap are manufactured. When Cienfuegos has proper sanitary provisions, which it is expected will be soon, it will be a splendid place of residence, for the climate is dry and moderately warm throughout the winter, averaging 69 degrees. Summer sends the mercury up to an average of 84 degrees.

Cardenas, on the north coast, 135 miles eastward from Havana, is a city of about the same size as Cienfuegos. Its only export of moment is sugar.

Trinidad is about fifty miles east of Cienfuegos. It is 900 feet above sea level, on a mountain slope, and about three miles inland from its port, Casilda, a poor one save for light-draft vessels. But four miles east is Masio Bay, accommodating sea-going ships. Trinidad's climate is ideal in every way, and its healthfulness is incomparable. Its natural drainage keeps the town wholesome and pure. Trinidad exports sugar and a little honey.

Sagua la Grande, on the north coast, is eleven miles inland from the port of the same name. Its sanitary conditions are superior and its climate a fine one; consequently, it is a healthful community. Its export trade is almost exclusively devoted to sugar.

On the extreme easterly end of the island, on its northerly side, lies Baracoa, whose chief industry is the grinding of cocoanuts for their oil. It also has a chocolate factory and a petroleum refinery, and exports bananas and cocoanuts. Its climate, too, is salubrious, the yearly average temperature being 78 degrees. During the summer months the heat, which otherwise might be difficult to bear, is moderated and tempered by the almost continuous breezes from the southeast.

Other centres of population, scattered throughout the island, all claiming beauties and advantages, and requiring but the magic touch of American energy to transform them into prosperous communities, are Manzanillo, Guantanamo, Santa Cruz del Sur, Tunas de Zaza, Sancti Spiritus, Pinar del Rio, Bayamo, Puerto Principe, Alto Songa, Holguin, Esperanza and Bolondrón.

Santa Clara is an especially promising town, and this, with the other interior villages, is most truly representative of Cuba.

OPPORTUNITIES IN CUBA.

CHAPTER II.

AGRICULTURE.

CUBA is essentially an agricultural country. It is upon the products of the soil that her national prosperity will depend, and it is to agricultural pursuits that the majority of Americans seeking opportunities must turn.

There are chances for all grades of agriculturists, but the class urgently wanted is the small farmer, who can take up tracts of land in the vicinity of plantations already in operation. For the man of even moderate means, but skilled in the raising of coffee, fruits or vegetables, there are splendid possibilities.

The carefully studied measures inaugurated by the Cuban government for the development of agriculture, the chief source of wealth, for the establishment of agricultural banks, for inviting immigration suited for field work, for aiding stockmen, may be said to have only commenced, but it is the intention of those in authority to give every encouragement to both native and foreigner desirous of engaging in agricultural pursuits.

There is much to be done by the government. The question of good roads is so serious that it will be taken up without delay. Outside of the provinces of Havana, Matanzas and Pinar del Rio, and except in the vicinity of the large cities, there are few good roads in Cuba, and even those that are passable in the dry season become almost impassable for wagons in the rainy season.

Good roads are, to a certain extent, bound to follow railway development, and the building of the Cuba Railway by Sir William Van Horne will add much to the possibilities of intercommunication. This railway will extend, when completed, from Santa Clara to Santiago de Cuba, with connecting lines into Havana and other coast ports. It is a work of considerable magnitude and its immediate effect, especially upon the agricultural development of the island, cannot be overestimated.

FLORA.

Owing to the richness of the soil, the equable, moist temperature and abundant rainfall, the island of Cuba is a veritable garden, abounding in flowers, luscious fruits, and a great variety of vegetables. Uncultivated nature has a wild luxuriance of jungle, grove and forest to be traversed only by the aid of a machete or along well-worn pathways. As an instance of the remarkable and varied fertility of Cuba's soil it may be stated that more than three thousand native plants have been found in the island besides those introduced.

They include innumerable species of valuable wood, such as the mahogany, ebony, granadilla, cedar, walnut, ceiba, lignum-vitae, oak, pine and palm. There are over thirty species of the latter, among them the royal palm, which, to the poor Cuban, is the most valuable of all, as the leaves provide him with a roof and the trunk with walls for his primitive dwelling.

In the interior the forests are in large part made up of Cuban pine, which forms excellent lumber. Although a large proportion of the island has been cleared during the past three hundred years for the purpose of cultivation, yet it is estimated that 13,000,000 acres, or nearly half its area, still remain clad in original forests. These areas are found mainly in the eastern part of the island, in the provinces of Santiago and Puerto Principe.

Over a large part of the cleared or cultivated areas are luxuriant grasses, which, like the paraná and guinea grasses, grow to a height of several feet and are abundant and nutritious.

The soil of the island is generally composed of all the elements necessary to foster the growth of vegetation, and its depth frequently exceeds three yards; there having been mixed therewith throughout the past ages animal and vegetable detritus, the latter formed by the cutting of the trees which compose the great island forests.

The land in Cuba is generally very fertile, especially that which formerly carried forest growths, and is of four classes, viz., calcareous-ferruginous, alluvial, clayey and silicious. The color of these soils is varied, and, though this characteristic is not a basis for determining their quality, they are classified as red, black and "mulato."

The red lands, which contain oxide of iron with a proper proportion of clay and silicate, are excellent for the growth of oranges, and especially of tobacco, producing a superior quality of the latter. The black lands are rich in organic matter and are better adapted for those crops whose cultivation calls for a loose soil and plenty of humidity.

It may be said that providing that the land is good, whatever be its color, it is suitable for almost any crop. Cane, cacao, coffee, bananas, fruits of all kinds, corn, millet, etc., may be produced with excellent results, irrespective of the color of the soil.

Before considering Cuba's agricultural possibilities in detail it may be well to review briefly the general characteristics of the different provinces.

THE PROVINCE OF PINAR DEL RIO.

With regard to their geological formation, there are many varieties of land in this province. The quaternary formations are divided into two parts, or zones, one in the north and another in the south, the southern part being much more narrow than the other. The tertiary lands are also divided into zones parallel to the above and are of a clayey, calcareous composition mixed with mold. They are especially adapted to the cultivation of tobacco, particularly in the south, where are situated the famous vegas, or lands devoted exclusively to tobacco.

The cretaceous lands are found in the high central parts of the province and are of poorer quality, but upon them coffee is cultivated to some extent, and stock raising is the chief industry.

PROVINCE OF HAVANA.

In the western and southern part of the province of Havana, in the municipal districts of Alquizar and Güira de Melena are red lands (of the tertiary formation), where a good quality of tobacco is grown, known as "partido," as also coffee, bananas, cane and oranges.

In the east, in Güines, Melena del Sur, Nueva Paz and San Nicolas, are found black lands which produce good cane. Irrigation is practiced to a limited extent at Güines and large quantities of green vegetables, potatoes and onions are raised which supply the market of Havana.

The clayey, calcareous and somewhat sandy lands of the municipal district of Bauta, to the east of Havana, are especially adapted to the cultivation of the pineapple.

PROVINCE OF MATANZAS.

The red lands of the municipal districts of Jovellanos, Corral Falso, Perico, Bolondrón and Union de Reyes are considered good for cane, coffee, oranges, bananas, corn and vegetables. In the districts of Alacranes, Jaguey Grande, Máximo Gomez and Limonar are silicious, clayey, calcareous lands, black and mulatto in color, with a thick vegetable mold overlying, making them specially adapted to the growing of cane.

PROVINCE OF SANTA CLARA.

There are many varieties of land in this province. That of the quaternary formation extends from the boundaries of the province of Matanzas to the mouth of the river Sagua la Chica on the north and to Cienfuegos on the south. The tertiary formation is found in the north from the river Sagua la Chica to the border of the province of Puerto Principe, forming a wide zone towards the west to Matanzas. On the south coast is a narrow strip extending from the port of Cienfuegos to the province of Puerto Principe. This zone begins to grow wider in the central part of Santa Clara, occupying a considerable extent of land.

The cretaceous formation is limited to a small area to the west of Cienfuegos. The primary formation is encountered on the eastern side of the river Arimao, extending towards the high lands to the north of Siguanea. The vegetable soil or mold of this province, near Sancti Spiritus and Trinidad, is the most fertile of the entire island. At Manicaragua tobacco is raised which rivals that of the Vuelta Abajo region. On the lands about Cienfuegos, Cruces, Rodas, Yaguajay, Remedios and Sagua are to be found magnificent cane plantations. From Remedios to Sancti Spiritus the cacao is easily grown and in the virgin mountains of this region the land is capable of supporting large herds of cattle, both on the plains and in the mountains. This is particularly true of the region about Sancti Spiritus,

PROVINCE OF PUERTO PRINCIPE.

The entire northern littoral of this province and a part of the south coast, from the port of Santa Cruz to the western boundary of Santiago de Cuba, is of the quaternary formation. The tertiary forms two parallel zones, one on the north and the other on the south, in which are found the municipal districts of Morón, Neuvitas, Ciego de Avila and Santa Cruz. The igneous lands include a broad strip in the centre of the province, in which is located the city of Puerto Principe.

The soil is for the most part quite deep. Great forests cover the province, in which are found a variety of valuable timber trees. There are two large sugar factories in this region. Henequen and a variety of fruits are also grown and the natural pasture has always supported a goodly amount of stock, the latter being the chief source of agricultural wealth.

OPPORTUNITIES IN CUBA.

PROVINCE OF SANTIAGO DE CUBA.

The lands of this province, the largest of the island, are varied in character. The quaternary formations on the south coast embrace a zone extending from Cape Cruz to the borders of the province of Puerto Principe; on the north coast they extend from the boundary of Puerto Principe to Point Mangle. Both of these strips are quite narrow. The tertiary formations are irregularly scattered throughout the province, and are found in the southern part, where are located the towns of Piedras, Jiguaní, Barajagua, Mayarí, San Pedro, San Marcos and the municipality of Gibara. The cretaceous lands are also found in the south, extending from Cape Cruz to Guantanamo and on the northwest to the mountain Toa. This is a rich mineral region.

The lands of igneous formation include a wide zone, embracing the municipalities of Bayamo, Holguin and Victoria de las Tunas, as well as the northern slopes of the Sierra Maestra, which is crossed by a band of cretaceous formation. The lands of this province are for the most part suited to all kinds of crops, such as cane, coffee, cacao, tobacco and fruits. About Sagua de Tanamo, Baracoa and Puerto Padre, plantations of bananas and cocoanuts constitute the chief source of wealth, bananas being exported in large quantities to the United States. In the high lands are also cultivated many of the fruits of the temperate zone. There are also in this province extensive forests which furnish fine woods of many varieties. The plains, with their natural pasture, checkered with streams of pure water, are well adapted for stock raising, and this industry has always been followed with profit.

SUGAR.

The chief agricultural product of Cuba at the present time is sugar, of which more than one million tons (English tons of 2,240 pounds) have annually been produced in normal years.

The sugar zone extends from the eastern third of the province of Pinar del Rio to the eastern half of the province of Puerto Principe, the richest and largest part of this area lying in the provinces of Havana, Matanzas and Santa Clara, Matanzas being the most productive of the three.

The effect of the recent wars in Cuba has been severely felt by the sugar industry, and the rehabilitation of the large plantations will require much time and considerable expenditure, but with the liquidation of existing loans on rural property, the establishment of banks and a stable financial system, the value of sugar as a national product will be unsurpassed.

As an evidence of what can be accomplished in sugar, the crop of 1894, which reached the enormous figure of 1,054,214 English tons, was cultivated on less than one-fourteenth part of the area of the island (28,000,000 acres), a large part of which can be made suitable for sugar. In short, it is perfectly apparent that, under favorable conditions, Cuba can easily become the greatest sugar-producing country in the world.

It requires a large outlay of capital, both for land and machinery, and excellent executive ability in order to make a profit in the face of the beet sugar competition, that is so generally protected by bounties or by protective tariffs.

In order to compete successfully with the beet sugar produced in other countries under specially favorable conditions, as, for example, an abundance of cheap labor, a low rate of interest for money borrowed, etc., it is necessary to take advantage not only of all mechanical improvements, but to change the present system of extensive cultivation, generally employed throughout the island, for intensive cultivation, in order to secure the largest possible production of sugar from each ton of ground cane. Unfortunately, on account of the destructive war which has recently terminated, there are but few planters in Cuba who are able to command the capital which these changes require, although it is evident that good results would reward their employment. In this connection it can be said that the judicious investment of foreign capital undoubtedly would prove a source of increased wealth not only to the country at large, but to the investor.

Velasquez, the first lieutenant-governor of Cuba, is said to have introduced the sugar cane in 1523, although its cultivation was quite limited for many years. At the close of the seventeenth century, with a population in the neighborhood of 50,000, Cuba had 100 sugar plantations, with an average product of about 100 tons each.

The removal of trade restrictions which followed the British occupation of the island, and the successful prosecution of the slave trade, gave an impetus to the production of sugar, which in 1817 amounted to about 70,000 tons. In 1830 this had increased to about 90,000 tons, in 1840 to 200,000 tons, and in 1850 to 300,000 tons, or about one-fourth of the largest crop produced since.

In the meantime many improvements had been made in the mode of culture of cane and the manufacture of raw sugar by the use of steam power, machinery of all kinds, including furnaces, clarifiers, cane carriers, and railroad engines and cars had been introduced and miles of track built through the fields for the transfer of the cane to the mills. With the removal of excessive duties and trade restrictions of all kinds, further improvements will no doubt be introduced, and in this way the cost of cultivation sensibly diminished.

Sugar cane is reproduced from cuttings, and takes about eighteen months to mature. If the roots are not damaged in harvesting, the yield will continue from five to twenty-five years, and Humboldt mentions a cane field on the Matamoros plantation, which, in 1804, had been planted forty-five years.

The crops vary from forty to one hundred and twenty thousand arrobas per caballería, or from twelve to fifty tons per acre, and the cane contains from thirteen per cent. of sugar in December to eighteen per cent. in March and April, so the aim is to begin the cutting as late as practicable. The grinding season lasts from December 1 to May 15.

The average cost of raising a caballería (33.1633 acres) of cane, as well as the average production and price secured for the crop is, according to careful estimate, as follows:

Preparing the ground	$415 00
Seed	120 00
Planting	282 00
Cultivation	383 00
	$1,200 00

This may, perhaps, be reduced to $1,000 under favorable circumstances. The cost of cutting and transporting the crop to the factory varies according to the locality and the length of the haul, but it may be estimated at about $1.20 for each 2,500 pounds of cane. The average production is estimated at from 1,250,000 to 1,500,000 pounds per caballería. Of course, the crop depends to some extent upon the nature of the soil and the care given to cultivation. In new ground the crop may reach 2,500,000 pounds, and 2,500 pounds of cane are calculated to produce 275 pounds of sugar when manufactured by modern processes under intelligent management.

For some years past, sugar-making has been separated from agriculture in the majority of the large estates and the centrales, or factories, have succeeded in obtaining thereby a considerable increase in production.

The processes of manufacture were improved very much during the years immediately preceding the invasion of the western provinces by the revolutionary forces in 1895. With but few exceptions, the factories were provided with furnaces for burning the bagasse, or crushed cane stalks, for fuel; expensive machinery and crushers were introduced for expressing the juice from the cane, the defecating pans were increased in size and modern machinery was employed for the evaporation, concentration and boiling of the saccharine juice. The best centrifugals were installed for separating the sugar from the molasses; chemical laboratories were attached to the larger factories to insure the best possible results at every step in the manufacture; in short, all the improvements employed at the time in other countries were in operation in Cuba with gratifying results.

Another improvement introduced in many of the sugar plantations that should be mentioned was that of having cheap railways running to all parts of the factory and warehouses in addition to those built for the purpose of uniting the factories with the ports or public railways, in order to lessen the cost of transportation. For the purpose of loading cane in the fields and unloading at the railroad, or carrying it direct to the mills, different systems were employed, some of them patented in the island, which gave very good results, especially in view of the scarcity of labor during the busy grinding season.

The question of labor in connection with the profitable raising of sugar is very important. During the past seven years labor was very poor and much demoralized, many of the abler men being in the insurrection. The establishment of the new government has changed all this, however, and labor is much more available. As an instance of the cost of labor, both skilled and unskilled, to the sugar planter, the following salary list maintained by an average plantation in normal times is given:

ALL THE YEAR.

(Salaries per month, in gold, and maintenance.)

Administration	$166 66
Servant	30 00
Overseer	85 00
Second overseer	35 00
Steward and bookkeeper	50 00
Assistant	25 00
Carpenter	85 00

Montero	$25 00
Assistant	20 00
Hostler	20 00
Assistant	15 00
Pumping water	6 00
Cook	30 00
Assistant	25 00
Night watchman	20 00
Mounted field guard ....$25 and	30 00
DURING CROP TIME.	
Mounted field guard	$25 00
Timekeeper.	20 00
Waiter for operatives' table	15 00
Vegetable gardener	20 00
Bueyero (teamster)	22 00
Assistant ....$16 and	12 00
Foreman with stevedores	28 00
Cartman	26 00
Plowman	23 00
Cane cutters	21 00
Cane lifters	15 00
Cane loaders (stevedores)	21 00

During the summer months salaries for field labor averaged about $17 per month.

Cost for maintaining labor averaged about $7.50 per month in gold; cost for maintaining overseers, foremen, carpenters, cooks, stewards, guards, etc., amounted to about $12 per month.

RATIONS.

Rations for each man per day were as follows: Clear beef, one pound, or its equivalent in tasajo, salt fish;

rice, one pound, or its equivalent in beans, peas, macaroni, etc.; lard, two ounces; coffee, one ounce; sugar, two ounces; bread, six ounces, or, instead of bread, sweet potatoes, plantains, or melanga; sweet oil, bacon, salt, and spices sufficient to season the food. During the winter months cabbage, tomatoes, and turnips are served every day without regard to rations.

The discipline followed by the average planter is necessarily strict. The number of men employed requires a certain code, of which the following adopted by a well-known plantation near Havana is a fair example:

RULES AND REGULATIONS.

When a laborer enters his name on the pay-roll he receives his machete or hoe, tin plate, tin dipper and spoon, and same are charged to him, and are credited when returned.

Timekeeper makes his rounds twice every day.

Away from the batey smoking is strictly prohibited, and the penalty is immediate dismissal.

Salaries are paid any day between 11 a. m. and 1 p. m., Sundays excepted, to those who desire the money.

Except in case of sickness, meals are charged to those who are not at work.

To the sick such medicines as we have are given free. The most prominent of these is quinine.

If a man remains in the barracon sick for more than two days, he is sent to his home or to a hospital. If it is an injury received in the service of the colonia he is cared for until able to work again.

The bell tolls at 4 a. m. for the people to get up; at break of day, after having drank a sup of coffee, they go to the field; at 11 o'clock they return to breakfast; at 1 o'clock they again go to the field; at 6 o'clock they come in to dinner, and at 8 o'clock the bell sounds silence. After that absolute silence is enforced. The negro is fond of his amusement and dancing. This is permitted at seasonable hours, and sometimes the overseer gives special permission to prolong their amusements beyond the usual hour. Gambling is prohibited, but the prohibition can not be successfully enforced. In the dry season, at mid-day, when the people are in the batey, sentinels are stationed on the hills to give timely warning of cane fires. The number of "colonas" (those who cultivate cane on rented land and sell to the mills) has been reduced during recent years, owing to the fact that the land owners have been unable to render them the usual and necessary assistance for the purchase of oxen, implements, plowing, planting, etc., and there are no agricultural banks to advance money for these purposes, but the policy adopted by the new government of giving every possible aid to agricultural development of all kinds will serve to work a change in these conditions.

TOBACCO.

Second only in importance to the sugar industry in Cuba is that of tobacco, in the cultivation of which almost a hundred thousand people are employed. Unlike sugar cane, the tobacco plant is indigenous and was found in use by the natives on the discovery of the island.

Except cigars and cigarettes, the numerous forms in which tobacco is used, such as smoking mixtures, fine-cut, plug, roll, or pig-tail for chewing and snuff, are not manufactured in Cuba.

Tobacco is raised as an article of commerce in but four of the six provinces of Cuba, viz., Pinar del Rio, Havana, Santa Clara, and Santiago de Cuba, although there is no question but that tobacco can be advantageously raised in the other two. To the trade the tobacco of Pinar del Rio is known as the "Vuelta Abajo," that of Havana as the "Partido" and "Semi-Vuelta," that of Santa Clara as "Las Villas," or Remedios leaf, while the leaf of Santiago is known as "Oriente."

The quality of Cuban tobacco is world renowned, more especially that known as the "Vuelta Abajo," which is used in the manufacture of the finest cigars. Every attempt—and there have been many—to reproduce this tobacco elsewhere, even in Cuba, has failed, and the secret of its superiority remains untold. The Sierra de los Organos, a range of mountains running along the entire length of the province of Pinar del Rio, is no doubt a favorable cause, as it breaks the high winds which do so much damage to the plants elsewhere. Various other causes have been assigned, and probably they have all contributed to the excellence of the tobacco. To what it is especially due will probably be known when the soils in which it has been cultivated shall have been carefully analyzed and compared and the chemical changes due to curing and fermentation are better understood.

The operations connected with the cultivation of tobacco may be briefly described as follows:

The tobacco crop is grown from nursery or transplanted plants. These plants are raised in seed-beds, located and prepared with great care and protected, as far as possible, from insects. The seeds are very small, much smaller than hayseed, and while there are between three and four hundred thousand in one ounce, the seed coat is so hard that only about seventy-five per cent. of the seed will sprout. On this basis one ounce of seed ought to produce between thirty and forty thousand plants, costing the planter in the neighborhood of $2.50 per thousand. The seedbeds and seed having been carefully prepared, the seeds are sown in September, and in from six to seven weeks, when the young plants are from eight to ten inches high, they are ready for transplanting. This is done with the greatest care, as a very slight injury will kill them, and they are set out from twelve to eighteen inches apart in furrows. The distance between the latter varies from two to three feet. It is said that tobacco grown under shade trees is of better quality than when grown in the open.

The plants are hand-planted, and not by machine, as in many parts of the United States, and the operation is necessarily much slower.

It requires about four months for the plants to reach maturity, so that the harvest is in January. During this interval they require the greatest care to protect them against the tobacco worm and other insects, and against weeds. From time to time, and especially after rains, they are cultivated, the buds or top, and also suckers, as they appear, are removed, and every precaution taken to insure the full development of the leaf.

The pruning is done with the thumb nail, as its dull edge closes the wound and prevents bleeding. According as the plants are topped high or low, there will be from eight to ten or from eighteen to twenty leaves on a stalk. As soon as the leaves have ripened, the cutting begins. Each stalk is cut in sections, having two leaves on each; they are hung on poles and carried to the drying sheds. A section of each stalk, with a good strong sucker on it, is left in the field, from which a second, or what is called a sucker, crop results, and, while the quality of this crop is not as good as the true crop, it answers very well for fillers.

The drying or curing process continues for three or four weeks, or even longer. During this period great attention must be given to the moisture, temperature, and ventilation of the drying house in order to produce those changes which characterize cured tobacco of a superior quality.

Sweating or fermentation follows the curing, and it is to this that the tobacco owes its peculiar flavor. During or after this process the leaves are sprayed with water or a petuning liquid, which is supposed to give the leaf a darker color and a better flavor, but this is questioned by some tobacco manufacturers. When fermentation has taken place, the leaves are sorted and made up into bundles, and those into bales of about fifty kilos (110 pounds) each. They now ready for transport to market.

The average cost of cultivating a caballería (33.1633 acres) of land until the tobacco is baled and ready for the market is as follows:

Preparation of the land	$450	00
Value of fertilizer needed for each caballería at $60 per ton	420	00
Value of 561,000 plants at $2.50 per 1,000	1,402	50
Sowing plants and sowing fertilizer	165	00
Cultivation, transplanting, budding, etc., with direct work and care of tobacco house	1,982	00
Cutting and taking leaf to dry house	644	00
Piling the tobacco	40	00
Gathering seed for a caballería of land	50	00
Deterioration of machinery and unforeseen expenses	300	00
Expenses of gathering the crop	1,688	00
Total	$7,141	50

The proceeds are estimated as follows:

Value of 211 bales at $50 per bale	$10,550 00
Value of 1,850 pounds of seed	216 00
Value of the stalks sold as a fertilizer	12 00
Total	$10,778 00

The expense incident to the preparation of the ground, harvesting the crop, etc., has been fixed on a basis of paying $1 for a day's work, as that is the price which generally obtains in the island. The question of fertilizers is rather a flexible quantity, as the grower may prepare a good part of it on his own ground, and, should the planter grow his own plants, the expense could thereby be materially reduced.

The price received for tobacco is so varied that only the broadest generalization can be stated, for the finest quality of wrapper sells as high as $500 per bale in place of $50, as has been calculated, while on the other hand there are some qualities that sell as low as $5, but as a rule the more inferior the tobacco the greater weight per given area is secured.

Tobacco, besides being the second crop in importance in Cuba, is the basis of two valuable industries, one agricultural, which prepares the leaf and packs it for export, and the other the manufacture of cigars and cigarettes for both domestic and foreign consumption.

COFFEE.

The cultivation of coffee in Cuba dates from some-where about the years 1796-1798, when it was introduced into the island by refugees from Santo Domingo after that island was ceded to France. For many years the cultivation of coffee was one of the most remunerative industries, but in 1843 and 1846 violent hurricanes seriously damaged the coffee crop, and permitted the practical absorption of Cuba's markets by the growers of the East Indies and South America. The large and more certain profits of sugar cultivation also had weight in reducing the industry, and in time Cuba's trade in coffee practically disappeared.

In the year 1900 the crop was only 130,000 bags, not enough for home consumption, but the awakening of Cuba's energies and the fact that in richness, flavor, and the productive capacity of the trees the coffee of Cuba is not surpassed by that of any other West India island or by South America, gives rich promise for the revival of the industry.

Although coffee can be raised to advantage in all the provinces, except possibly Puerto Principe, the province of Santiago de Cuba is by far the best. The topographical features of this province, with its ranges of mountains, hills and high plateaus, render it especially adapted to the purpose, because coffee thrives best at altitudes between 1,500 and 2,500 feet.

It is not an expensive crop to cultivate, and it is said that few occupations are more delightful than that of the coffee planter, or more remunerative under favorable conditions.

In the cultivation of coffee the seeds are first sown in a nursery, and when the plants are a few inches high they are transplanted; thereafter, like the tobacco plant, they require great care. The trees begin bearing in the second year, and by the third a good crop may be expected. A tree in good condition will yield from one and a half to two pounds of berries. The trees are rarely allowed to exceed a height of ten feet for convenience in harvesting the berries; this is accomplished, and the trees are made to spread laterally, by repeated prunings. Two crops each year reward the successful coffee planter, so that the trees are almost always in bloom.

As the coffee berry requires shade, fruit and other trees are planted among the coffee trees for this purpose, so that a coffee plantation can be utilized for both coffee and fruit culture, without detriment to either and with corresponding benefit to the planter.

The average annual cost of cultivating a caballería (33.1633 acres) of coffee land is as follows:

FIRST YEAR.

Clearing	$300 00
Plowing, fertilizing and planting	384 00
Providing shade	25 00
Cultivation	150 00
Total	$859 00

SECOND YEAR.

Replanting both shade and coffee trees	$66 25
Cultivating and cleaning ground	150 00
Total	$216 25

THIRD YEAR.

Cleaning ground	$150 00
Other expenses	50 00
Total	$200 00

The third year the crop ought to amount to 10,000 pounds and its value would be about $2,000. After the third year the production increases and expenses decrease, and, if the general custom is practiced of planting bananas in the coffee grove, the expense of preparing the land as well as other expenses may be met by the sale of bananas.

Cocoa, as an agricultural possibility, is of considerable importance. Although the cocoa trade has not been large for many years, owing to excessive taxation and the devastations of war, its value to the country is such that it will early receive the attention of the government. The province of Santiago is especially adapted to its cultivation and the cocoa bean of Cuba is of excellent quality.

FRUITS AND VEGETABLES.

The raising of fruits and vegetables for the American market is meriting the serious consideration of many Cuban farmers. The necessity of multiplying the island's sources of income is apparent to every thinking person, and to these the possibilities offered by fruits and the small vegetables appeal very strongly. It is appreciated that a single crop country is always at a disadvantage, whether that crop be coffee, corn, sugar, cotton, or rice. Crops will fail, markets will go to pieces, over production may unsettle values, and the land with but a single resource is constantly exposed to the danger of a panic. With the possibilities presented by the fertile soil of Cuba, and a climate that invites the growth of all sorts of vegetation, her crops should be varied. Cuba should and could export, not sugar alone, but coffee, tea, live stock, and, because of existing favorable conditions, especially fruit and what is commonly known in the North as "garden truck."

Of fruits, probably the most important is the banana. There are many varieties in the island. They are grown in all parts of Cuba, but chiefly where the soil is deep and rich and where there is an abundance of moisture, for the plant suffers much from drought. A large business has recently been developed in raisingbananas for the American market, and steamers are now engaged in the transportation of this fruit. There is no reason why Cuba should not secure a good part of the trade that hitherto has been developed between the Southern ports of the United States and Central America.

Upon lands situated on the north coast of the province of Santiago de Cuba, which is specially devoted to the cultivation of the banana, the cost of cultivating a "caballería" (33.1633 acres) has been estimated as follows:

FIRST YEAR.

Clearing the ground	$300 00
Making and digging holes for plants	55 00
Setting out and cultivating	517 50
Cutting the 7,000 bunches and transportation to nearest port	1,050 00
Total	$1,922 50

The 7,000 bunches, sold at fifteen cents each, the average price, will produce $2,210.

As there is no clearing to be done or other work than that of cultivating and cutting the bunches and transporting them to the port, the expenses the second year are reduced to about $1,250, while the proceeds are, as during the first year, $2,210. There are a number of varieties of bananas produced, some producing more abundantly, and others giving a smaller harvest, while the quality also varies, and the demands of the market that is to take the crop should be taken into consideration.

The pineapple, of which there are two varieties, the white and purple, is considered the queen of Cuban fruits. The first is known as the sugar loaf, and is large and very sweet, but it is the latter which is usually exported. This fruit grows best in loose limestone land, on the hillsides or in stony places, because moisture injures the plant. It may almost be said to be a child of the desert, and is a wonderful example of the bounty of nature in providing a suitable growth for every sort of soil upon the surface of the earth.

The aguacate, alligator pear, or butter fruit, as it is sometimes called, are extensively consumed both in salads and in their native state. The mango, the mamay, both red and yellow, the zapote and the guava are also grown. The latter is used in making preserves and jelly. The custard apple, with its aromatic acid juice, is used in making ices, sherbets and summer drinks.

Oranges grow to perfection in all parts of the island and their cultivation is at present receiving much attention, for the crop is gathered during the months of December and January, when exportation to the great markets of the United States is possible. Of course, Cuba is below the frost line, and freights from her coast cities to the markets of the United States by water ought not to be more than rail rates from California to the Atlantic seaboard, so that the possibilities of the development of the orange industry are flattering, indeed, as this is a crop that does not call for a great deal of labor, and the returns in the climate of Cuba are certain and constant.

Vegetable gardening has been confined hitherto to supplying the local demands in the neighborhood of the larger towns of the island, and even this has not been done at all times, for there have always been more or less of green grocers' supplies imported into the island from the United States. This is not the natural course for this class of crops to take, for the soil and climate of Cuba are particularly adapted to the raising of many classes of vegetables, and they could be placed in the markets of the Atlantic seaboard so early in the season, before the gardeners of the Southern States commence to gather their crops, that a good price could be assured. This is one of the smaller industries, not requiring a large capital, that will no doubt prove attractive to both Cubans and Americans as soon as freight rates and prompt delivery can be assured.

ALIMENTARY SUBSTANCES.

Wheat was formerly cultivated in certain parts of the island with satisfactory results, but it has not been sown for many years, it being impossible to compete with the great wheat fields of the temperate zones.

Corn, whose food elements are very high in Cuba, as an analysis of the native grain shows a large per cent. of gluten, albumen and phosphates, is grown to some extent. There are three varieties, the yellow, the white and the red. Corn may be grown at the same time with many other crops, and three harvests can be gathered in a single year, but only two are generally produced.

Rice, which serves as the basis for the food supply of the Cuban people, grows well throughout the country, not only in the low places, but in others as well, but its cultivation is limited to comparatively small tracts of land.

Beans, both white and black, produce two crops per year and are also eaten green. They produce abundantly, but their cultivation is limited. Many other vegetables could be cultivated which would render profitable returns if there were means of communication, so that they could be placed upon the market at the proper time.

Tuberous vegetables contribute greatly to the food supply of the Cuban people. Irish potatoes, sweet potatoes, yams and others are easily cultivated and render a large return for the time and labor bestowed upon them.

The following additional plants could be grown with profit. The local, or vernacular, rather than the scientific name is herewith given.

Among the febrifuges may be mentioned: La Aguedita, la curbana, la quina pitón, las quinas, las caseareas, la escoba amarga and la guanina.

As purgatives are employed: El piñón botija, la yerba niña, el manzanillo, la castaña prugante, la higuereta, la herba hedionda, sen del pais and la caña fistola.

As emetics the natives are accustomed to use: El tataro, el lirio sanjuanero, el itamo real, la flor de la calentura, la ipecacuana comarrona, etc.

The almástigo is employed as an astringent and the apaste as a vermifuge. The cojate, la caña santa and la chufla are used as diuretics. The papaya is considered as a vegetable pepsin and there are also a large number of other plants whose roots, seeds, bark or juices have a high reputation among the country people as possessing medicinal virtues, and intelligent study and experiment would doubtless give substantial results.

TEXTILE PLANTS.

The hamie, although not a native of the island, has been acclimated and is easily grown on any soil, especially if somewhat dry. In Cuba it grows at times to a height of three meters. Each plant produces from thirty to forty shoots and the fibre is of good quality. The corozo palm is another important fibrous plant now grown in Cuba, though not as extensively as it should be. It produces an excellent and strong fibre, locally known as "pita de corojo," from which are manufactured strong ropes used for reins, harness, fishing nets, etc. It is quite common in the central and eastern parts of the island.

The majagua ("hibiscus tiliaceus") furnishes a fibre that is but little affected by the atmosphere, and is, therefore, largely employed by surveyors in their work. This fibre is the product of a beautiful forest tree, which attains to the height of from six to seven meters, and whose wood is hard, light and flexible.

Two varieties of henequen are found in the island, one native and the other imported, which produce a hard, strong fibre, usually employed in the manufacture of ropes and cordage. The plant grows spontaneously and with profusion in any soil, even the most sterile, providing that it is rich in lime and sand.

The "lengua de vaca" (cow's tongue), belonging to the "hemodoraceas" family, was recently introduced into Cuba, where it grows freely. It contains pearly white fibres so beautiful and strong that it has been employed with excellent results in the manufacture of fine cordage and linen-like goods, which possess the important quality of being able to resist the action of salt water.

There are also found many other fibrous plants like jute, varieties of bananas and pineapples, among which may be mentioned the "maya," from whose extremely fine filaments may be woven cloth resembling the celebrated nipa of the Philippines. Other fibrous plants, like cotton and flax, grow well in Cuba and lend themselves to cultivation on a large scale.

It is impossible to give figures showing the cost of production and the prices to be obtained, but as the land is cheap, wages not very high, and ocean freights moderate, the prospects for a profitable business are sufficiently flattering to invite careful attention.

STOCK RAISING.

Cuba has large tracts of uncultivated land, which, before the war, was devoted to grazing. The custom among stock raisers was to allow the animals to care for themselves, seek their own food and drink, and but little or no attention was paid to breeding for the purpose of improving the quality of the stock. That this industry was at one time important may be seen from the following figures published in a bulletin issued by the Chamber of Commerce of Havana in 1891 and 1892:

	1892.	1891.
Horses	595,805	531,416
Mules	49,645	43,809
Asses	1,910	1,889
Cattle	2,585,309	2,455,788
Goats	7,378	8,910
Hogs	585,362	570,194
Sheep	87,793	78,492
Total	3,863,202	3,689,948

By an examination of these figures which relate to horses and cattle, which are, of course, the most important, assuming that the increase for the years 1893 and 1894 was equal to that shown between 1892 and 1893, it may be fairly estimated that immediately prior to the last revolution there were more than 3,000,000 cattle and over 700,000 horses in the island.

Hogs are also an important factor in contributing to the animal wealth of the country, as they supply almost all the meat eaten by the country people in Cuba, but their number was reduced, as shown above, due, doubtless, to some of the many diseases to which they are subject.

By taking the above statistics and comparing them with those furnished by the Department of Agriculture for Cuba, it appears that during the war over 95 per cent. of the cattle and over 90 per cent. of the horses were destroyed, leaving the island almost destitute of animals. As soon as peace was restored the farmers and planters who were possessed of capital or credit commenced as rapidly as possible to replace at least their work animals.

The government was desirous of building up the productive energy of the country, and was eager to aid the farmers in the central and western parts of the island, who had suffered the most severely, and where the animals were almost totally destroyed, and, as they were unable to restock their farms, the Secretary of Agriculture was authorized to spend a large sum of money to be used for the importation of horses and cattle. The animals commenced to arrive in December, 1900, and were disembarked at the ports of Tunas de Zaza, Casilda, Nuevitas, Gibara, Manzanillo, Baracoa and Puerto Padre. There were imported in all 5,494 head of cattle and 1,158 horses, which were distributed among the small farmers, the latter entering upon a contract to pay for them at a future date. This measure has been of great assistance in aiding the war-swept island to again place itself upon a self-supporting basis.

The Cuban cattle industry has commenced to build up again, although but slowly, and it is necessary to do everything possible to develop it, both in order that the poorer classes may be able to secure meat for their tables (as they now rarely taste it because of the high price), and because cattle are an indispensable factor on the sugar and tobacco estates of the island.

One-half of the 900,000 caballerías of land composing the area of Cuba may be easily devoted to stock raising, and when fully stocked will not only abundantly supply all the demands for domestic consumption, but will also furnish animals for export to the ports of the neighboring republic, which are situated far from the cattle-producing regions. Ocean freights from Cuba would be less than the rates charged for long-distance railway transportation in the United States.

According to the data furnished by the Collector of Customs for Cuba, the importations of cattle into the island for the year 1901 and for the first two months of 1902 were as follows:

ALL CUBAN PORTS, 1901.

MONTHS.	BULLS.	COWS.	CALVES.	STEERS.	TOTAL.
January	3,467	6,287	2,268	13,342	25,904
February	1,651	3,171	1,618	15,512	21,952
March	1,121	4,884	2,488	15,169	23,662
April	1,139	3,144	1,723	17,254	23,260
May	1,597	3,573	2,922	19,119	27,211
June	1,223	2,755	2,615	13,992	20,585
July	1,833	4,543	7,279	19,196	32,851
August	1,440	6,775	6,299	23,129	38,643
September	3,697	5,879	4,832	23,167	37,575
October	3,804	10,438	10,155	21,623	46,020
November	5,242	12,178	7,939	19,796	45,155
December	2,973	5,479	4,206	13,317	25,975
Total	29,187	68,646	54,344	216,616	368,793

ALL CUBAN PORTS, 1902.

MONTHS.	BULLS.	COWS.	CALVES.	STEERS.	TOTAL.
January	970	5,065	4,058	12,634	22,727
February	1,433	5,493	10,692	3,151	21,469
Total	2,403	10,558	14,750	15,785	44,196

According to recent estimates carefully made, there are at present in the island about 600,000 head of stock, counting both work and breeding animals. As stated before, in view of the abundant pasture, genial climate and the small expense connected with stock breeding, this business offers large returns for the capital invested.

Opportunities in Cuba.

Much of the cheap land in Cuba is well adapted to stock raising, being supplied with excellent pasture and an abundance of water, both of which can be depended upon throughout the year. No winter feeding or shelter is necessary and the stock, when ready for the market, is less dependent on good roads or railway transportation than sugar or tobacco. The great sugar plantations are always large buyers of oxen, which are used for plowing and for draft animals, while the markets of the cities and towns are constant consumers of meat. For persons of limited capital, with a desire to engage in stock raising, there is at present no more attractive field in America than the island of Cuba, which was almost denuded of cattle during the late war.

Public Land, Forests and Timber.

The amount of public land which might be devoted to agriculture, including the forest lands, and not taking into account that included in the littoral and the keys surrounding the island, as this latter is not adapted to agriculture, has been estimated as follows:

PROVINCE.	HECTARES (2.47 acres).	ACRES.
Santiago de Cuba	175,200	432,754
Puerto Principe	2,586	6,387
Santa Clara	9,181	22,680
Total	186,967	461,821

There are no public lands available in the more densely settled provinces of Matanzas, Havana and Pinar del Rio.

To this amount of public land under the direction and control of the Department of Agriculture, Commerce and Industry, should be added 5,368 hectares (13,259 acres) belonging to what is known as the "Colonia Reina Amalia," on the Isle of Pines, and 8,000 hectares (19,760 acres) of the Indian community at El Caney, in the province of Santiago de Cuba, which, with other parcels not very well known, are under the Treasury Departments of the respective provinces.

These public lands, as stated, are under the control of the Department of Agriculture, Commerce and Industry, and, never having been surveyed, are, therefore, not recorded in the register of public property. As these lands are covered with forest growths and are found almost entirely in the interior of the island, the absence of roads or other means of communication makes it impossible under present conditions to derive any benefit therefrom.

Some of the land controlled by the Treasury Department is rented and other tracts are granted to private parties upon the payment of a tax estimated at five per cent. of the value assigned to the land. These lands are under the supervision of the public administration in virtue of the following ancient Spanish custom of dividing the land:

When Spain took possession of the island of Cuba, the government granted extensive concessions of land to the first Spanish inhabitants for the purpose of stimulating all kinds of stock raising. These concessions, or "mercedes," were granted from the year 1550 until 1729, at which time they were prohibited.

At first no account was taken of the surface area or geometric form of these grants, but in 1579 it was decided that the grants should be given a circular form as being the shape most practical for measuring. One league was decided upon as the length of the radius to be measured from the centre, or "corral," which gave an area of 5,651.43 hectares for the grants to growers of small stock, and a radius of two leagues was assigned to the larger grants, which gave them an area of 22,606 hectares. These latter grants were called "sabanas," and the others were known as "sitios."

As these "mercedes," or grants, were circular, there were, of course, spaces or segments between their boundaries, which were called "realengos," whose title still vested in the government. Some of these "realengos" were also conveyed to individuals by grants, others were seized by individuals, while others were included within the adjoining "sabanas" or "sitios" by secretly moving the centre to suit the convenience of the owners.

The sparse population of the island and the numerous large grants that were issued were reasons for the practical neglect to take any account of the "realengos," until to-day it is not known how many remain. After the denouncement of land "squatters" by individuals was permitted by law, the third part of the land denounced and proven to be "realengos" was bestowed upon the denouncer and the remainder reverted to the government. To add to the confusion, the title to other land, which formerly belonged to religious orders, now vests in the government.

The forest lands and the timber thereon are also the property of the State. There are at least 1,226,920 acres of public forest in the island. The largest groups are found in the provinces of Santiago de Cuba and Santa Clara. In this forest area is included the timber land situated along the coast and the surrounding keys, which produces firewood, bark and leaves employed in tanning. The timber lands are divided among the provinces, as follows:

PROVINCES.	HECTARES (2.47 acres).
Santiago de Cuba	210,000
Santa Clara	124,000
Pinar del Rio	60,000
Matanzas	46,000
Puerto Principe	25,000
Havana	20,000
Total	485,000

The public forests have not until now been put to any material use. The products derived from them are sold at public auction whenever individuals have solicited the privilege of dealing in such products. This income, as well as that secured from the forest products of the coast and keys in the form of firewood and charcoal, have rendered but a trifling income to the government.

The future statesmen of the island of Cuba would do well to make a careful study of the whole question of forestry, both with a view to protecting the forests and to improving the output of timber, which is needed in the island. Considerable public revenue should be derived from the products of these great tracts of timber.

HOW TO PURCHASE LAND.

The first step to be taken in the purchase of land in Cuba is to examine the title. This, at times, is no easy task, as the land registries have suffered from the ravages of war, and, as indicated above, the metes and bounds of much of the land are not well defined. However, should there be any lien upon the property it should be duly recorded, and it is the duty of the registrar of property to issue a statement setting forth all claims against the property, if any there be.

Having secured this statement, the vendor and the purchaser go to a notary public, who will prepare the proper deed, which must then be presented at the Treasurer's office for the payment of the tax assessed upon the transfer of property. The tax being paid, and a receipt for the same secured, the deed is then taken to the registrar of property, where the real estate transferred is inscribed in the name of the new owner. The transfer tax amounts to one per cent. of the purchase price. The fees of the notary for preparing the documents amount to eight per cent. of the purchase price, and the fee for recording depends upon the value of the property and is fixed by a schedule of rates which form a part of the mortgage law of the island.

Should the land be known as "haciendas comuneras," communal lands, which are lands not yet surveyed and belonging to a number of owners, according to the amount of capital invested, it can only be acquired through a complicated process which calls for the advice of attorneys well versed in such matters. There is much communal land in the provinces of Santiago de Cuba, Puerto Principe and Santa Clara.

VALUE OF LAND.

The price of land varies a great deal according to location. In the municipal districts of San Luis, San Juan and others in the province of Pinar del Rio, where the best tobacco of the island is grown, the price of a "caballería" of land (33.1633 acres) is from $1,500 to $2,000, but there are places in the same province, especially adapted for tobacco raising, where the price is very high, indeed. The irrigable land in the municipality of Guines, province of Havana, adapted to vegetable gardening, is also quoted at from $1,500 to $2,000 per "caballería."

In other provinces land situated more or less convenient to factories or railroads varies in price from $500 to $1,500 per caballería for cultivated land. Farther away from the railroads in certain places in Puerto Principe, Santiago de Cuba, and even in Pinar del Rio, land may be purchased as low as $100 per caballería, or even less if taken in large blocks.

CHAPTER III.

THE MINING INDUSTRY.

PRIOR to the year 1884, the only mineral mined with satisfactory results in the island was copper, which was discovered in the sixteenth century at the village of Santiago del Prado, now called El Cobre, in the province of Santiago de Cuba. These mines were originally government property and their working was entrusted to contractors. The result, as might have been anticipated, was failure, the expense of operation exceeding the profits, and they were abandoned and remained idle for almost a century. About the year 1830 companies were organized, who operated the mines, and in nineteen years exported over 600,000 tons of ore, which was sold for something over $48,000,000. This large production was the output of two mines, La Consolidada and San Jose. After the year 1869, as a result of the Ten Years' War, the work in these mines was entirely abandoned, but after peace was declared the iron mines in Santiago de Cuba were operated by the Juragua Iron Co., Limited.

The great demand for iron ore induced other companies to enter the field. The Spanish-American Iron Co. operated mines at Daiquiri; the Sigua Iron Co. worked mines at Sigua and Berracos, and the

Cuban Steel Ore Co. became interested in the mines at Guama. The San Jose Copper Mining Co. and El Ferro-carril del Cobre also operated the old mines at San Jose and Ruinas Grandes situated in the municipal district of El Cobre. In addition to iron and copper, there are manganese deposits now being developed by the Ponupo Mining Transportation Co., the Sierra Maestra Mining Co. and the Standard Manganese Co. This ore, which is found in the province of Santiago de Cuba, is not only abundant in quantity, but of a superior quality, and constitutes an important source of wealth.

In the province of Santa Clara, which, next to Santiago de Cuba, is the most important mineral province in the island, there were worked, before the last war, the naphtha deposits of Motembo, the gold mines at Guaracabuya and the copper deposits of San Fernando and Santa Rosa.

After the many vicissitudes of the mining industry of the island, caused for the most part by the political agitation of the past fifty years, this important branch of national wealth, now being assured of a peaceful and stable government, commenced to take on new life. Mining is being prosecuted with vigor and bids fair to contribute not only to the welfare of those directly interested, but to afford labor to a large number of operatives and to add to the income of the public treasury.

To the developments above indicated, and to work begun in a number of mines in the municipal districts of San Luis, Cobre, Manzanillo, Gibara, Jiguani and Baracoa, in the province of Santiago de Cuba, there should be added that in other provinces, due to the new aspects of the mining industry. Concessions are being secured and prospectors are busily making investigations and investing capital. For example, the work now in progress in Pinar del Rio, in the mines of San Jose and Union, the first being coal and the other asphalt, is important. A railway is being constructed to carry the output to the port of Mariel.

In the province of Havana the asphalt deposits known as Havana and Angela Elmira are being worked, as also the copper mine called Salomon. In Matanzas province El Recreo, a copper mine, and a deposit of asphalt belonging to the Hamel Reynaldos Asphalt Mining Co. are now in active operation.

In addition to the mineral deposits above mentioned, viz., iron, copper, manganese and asphalt, there are others not less important, which have been announced in different parts of the island, such as gold, silver, lead, zinc, antimony, mercury, petroleum, naphtha, coal, and asbestos. There is also an abundance of building stone in great strata, easily worked, including marble of various colors, close-grained and susceptible of high polish, like that found on the Isle of Pines.

After the last war, the archives of the Inspector-

General of Mines were missing, and the record book, containing a list of all the mines in the island, has never been found, so that it is very difficult to set forth the true mineral wealth of Cuba. Although the legal status of many of the mines is in doubt, the provisional government issued the following mining concessions, which indicate a good degree of activity on the part of those interested in the mineral wealth of the island:

PROVINCES.

Number of Mines.

Substances.	Pinar del Rio.	Havana.	Matanzas.	Santa Clara.	Puerto Principe.	Santiago.
Iron	4	..	..	9	24	167
Manganese	..	..	..	2	2	141
Copper	4	2	1	17	7	81
Gold	..	..	..	20	..	9
Lead	1	..	..	..	..	9
Coal	5	..	3	2	..	7
Asphalt	15	7	20	22	6	8
Antimony	..	..	..	..	1	1
Mercury	..	..	..	..	2	2
Zinc	..	..	..	..	..	3
Blend	..	..	..	..	..	4
Petroleum	..	..	2	1	..	3
Mineral tar	3	..	1	..	..	..
Iron and copper	..	1	..	..	..	..
Oxide of lead	..	..	1	..	..	..
Graphite	..	..	..	1	..	..
Naphtha	..	..	..	1	..	..
Silver	..	..	..	..	1	..
Limestone	..	..	..	..	1	..
Totals	32	10	28	75	44	435

As will be seen, many of the above are simply concessions, on which no work has been performed, but it shows the prevailing desire to explore and develop the mineral resources of the island. The cost of the preliminary work, the high price of labor, and the lack of roads, both for the transportation of machinery and the conveyance of the output of the mines, militate against the rapid development of mining claims.

Furthermore, the present mining laws do not compel the owners of mining claims to develop their properties. The owner of any mining claim can, at present, hold it in perpetuity, and the only manner in which he can lose his right thereto is by failing to pay the small annual tax assessed against the property, but this condition probably will be changed by legislative enactment, which will oblige the owner to work or abandon his property, as is the tenor of the mining legislation in most other Spanish-American countries.

CHAPTER IV.

COMMERCE, SPECIAL INDUSTRIES AND THE PROFESSIONS.

THE manufacturing industries of Cuba, aside from the making of sugar and its by-products, molasses, alcohol and rum, and the manufacture of cigars and cigarettes, are not at present developed as they should be. Nevertheless, there is a decided movement in this direction, which gives ground for the hope that the near future will see many branches of manufacturing in a flourishing condition.

At present, the manufacture of cordage, pottery, cement, paper, beer, liquor, chocolate, vermicelli, ice, soap, perfumery, etc., is constantly increasing and assuming greater importance. Since the differential Spanish tariff, which was calculated to make Cuba a market for all Spanish products, was abolished under the American régime, and a tariff which bears equally upon the manufactured goods of all countries has been adopted, an increase of manufacturing along new lines may be confidently expected.

The manufacture of rope and cordage is well developed in Havana, where everything in that line is made, from the finest cord to the heaviest cable. There is a daily output of 16,000 pounds. The henequen fibre consumed in this work is imported almost entirely from Yucatan, the home of the henequen plant, because the fibre produced in the province of Puerto Principe, at Nuevitas, Cardenas, Matanzas, and other places does not supply a sufficient quantity to keep the factory supplied for a single month. This fact is indicative of a new direction that may with profit be given to the agricultural industry of the island.

The manufacture of alcohol in Cuba, which was begun owing to the necessity of working up the by-products of the sugar factories, is confined to the demand for domestic consumption. It is manufactured by certain factories provided with the necessary apparatus for distillation and enjoys a good reputation in the home market of the island.

In the province of Santiago de Cuba are to be found a number of factories which manufacture an excellent quality of rum, and now that the island of Martinique, which devoted its entire sugar crop to the manufacture of this beverage, has been practically destroyed by the volcanic eruption of Mount Pelee, in which so many lives and so much property were destroyed, the demand for Santiago rum will no doubt increase and the industry will become more important than ever before.

Cuba has always been an agricultural country. It has lived, moved and had its being in sugar and tobacco. Over one-half of the population, both urban and rural, have depended, directly or indirectly, on these two crops, which had to be sold to other nations. The raiment, a large part of the food, and most of the luxuries of the people have always been imported and paid for with sugar and tobacco. When these crops failed, or prices were low, Cuba suffered; when crops were abundant and prices high, Cuba enjoyed prosperous times and everybody was contented. None of the Southern States of the Union ever depended upon cotton to the extent that Cuba has in the past depended upon sugar, and as prosperity came to the South by the introduction of diversified industries, so the future prosperity of Cuba must rest upon the same policy.

Cuba is a tropical land. The mass of the population wears cotton almost exclusively. Cotton goods are all imported and have to pay a duty ranging from thirteen cents per kilogram for the cheapest to seventy cents for the finer grades.

The soil and climate of Cuba are peculiarly adapted to the growing of cotton. Like the more favored parts of Mexico, the Laguna region, cotton would produce enormous crops of fine staple, which would return a handsome profit upon the capital invested in the enterprise. Under the present protective tariff, which, it may be assumed with a good degree of confidence, will not be made lower, this home-grown cotton could be manufactured into the forms chiefly demanded by the poor people of the island, thus furnishing employment to many hands and contributing to the general welfare, as well as diversifying the native industries.

The cotton factories of Mexico have been very profitable properties for their owners, and the problems of securing the raw material and fuel were more difficult of solution than similar questions in the island of Cuba. Cotton, after the English took charge of Egypt, became one of the important crops which contributed much to the rehabilitation of the exhausted treasury of that ancient land. This history may be repeated in the new-born republic that guards the Mediterranean of the Western world.

WHOLESALE AND RETAIL BUSINESS.

In the city of Havana there are ninety-four wholesale grocery or provision houses and a number of warehouses which supply goods to the wholesalers. Almost the entire stock of both is imported from Europe and the United States.

There are also in the same city thirty-four wholesale dry goods houses and 293 retail stores, which also look to foreign lands for the goods that make up their stock in trade. In addition to the above, there are sixty-seven wholesale tobacco houses and 227 retail stores engaged in the sale of cigars and cigarettes, as well as many importing houses of hardware, light and heavy, machinery for sugar plantations, and factories, chinaware, lumber, furniture, drugs, jewelry, etc. In the other more important cities of the island, such as Matanzas, Cienfuegos, and Santiago, there are to be found other importing houses, but many of the retail establishments in those cities, as well as those in the smaller towns of the provinces, depend upon the Havana wholesale houses for their supplies.

The proprietors of these commercial establishments in every branch of business have always, with very few exceptions, secured large profits. It is reported that an agent for the sale of an apparatus for the burning of the crushed cane stalks under the boilers of the sugar factories realized before the war a net profit of nearly $100,000 per annum.

The grocery or provision houses, both wholesale and retail, notwithstanding their large number, have rendered extraordinary profits to their owners. It is not the custom for the majority of the inhabitants to lay in supplies in quantity, but to make each day's wage purchase each day's supply of food, and therefore purchases were always made in very small quantities. This custom accounts for the number and prosperity of the provision stores. There are street intersections in Havana where each corner is occupied by a grocery store, and by a mutual agreement among the proprietors (not called a trust in Cuba) they all sell at the same price, thus depriving the consumer of any of the advantages of competition.

The magnitude of the retail grocery business in Cuba may be appreciated from the fact that there are many stores which pass from their founders to other members of their families, who commence as clerks. If the original owner continues his connection with the business after reaching an advanced age, it is but nominal, for he will have acquired important holdings of real estate and become a landed proprietor.

The rural merchant secures, as a rule, from sixty to seventy per cent. of the wages of all classes of laborers, selling goods at a large advance over the cost price; the beverages, for example, retailing for at least 100 per cent. profit.

There is a great necessity for merchants, identified with the modern spirit of commerce, to establish themselves in Cuba and inaugurate a just system of competition. There are no department stores in the island, like those which may be found in every American city, and while the merchants now engaged in business would not welcome such an innovation, such establishments would be productive of decided advantage to the purchaser. There is now an establishment of this class in the City of Mexico, and it is producing marked changes in the old habits of business, having reduced the prices of nearly all goods consumed by people in moderate circumstances.

THE PROFESSIONS.

With reference to the professions and opportunities therein, the following paragraph from a pamphlet recently published under the title "Reforms in Higher Education," by Senor Enrique Jose Varona, Secretary of Public Instruction, is given:

"Cuba can get along with two or three literati, but needs hundreds of engineers. We have a superabundance of physicians and lawyers, but need surveyors, electrical engineers, directors of enterprises for subduing natural forces. We need, before sitting down to enjoy Virgil or construe Horace, to build roads, many roads, straighten rivers, pave streets, deepen ports, erect light-houses, cut down forests, develop mines, to improve, in short, in every way the conditions of life in order to lift up and educate the great inert mass of our poor population."

After citing the above, it might almost be well to avoid entering upon other considerations, for this shows that there is a great excess of physicians and lawyers and a woeful lack of intelligent men in other branches. This, which appears an anomaly, is due to the special conditions which formerly obtained in Cuban society. The Spaniard who came from his own country in search of fortune, without other capital than his own right arm, and with the firm resolve to labor until he secured a competence, could not devote himself to agriculture, owing to lack of means, and necessarily turned to commerce, where he could commence as a clerk, often without gaining more than his board until he had acquired a certain amount of experience. Others better situated, if they found themselves in Cuba with relatives or friends to aid them, also devoted themselves to trade.

In this way the Spanish element took almost complete possession of the commerce of the Island. Cuban families (and these include the heirs of those Spaniards who, after making a fortune, purchased real estate) were the owners of the soil and their children devoted themselves to agriculture, developing cane plantations, coffee groves, grazing farms, etc., which formerly rendered large profits. In this way there arose, as in the Southern States of the American Union, two social classes, one of which, the planters, represented the aristocracy and devoted themselves less and less to commerce. As their sons grew up, it was necessary to find other occupations for them, and they naturally gravitated to medicine and law. The merchants and all other well-to-do families, not caring to see their sons occupying inferior positions, influenced them to enter the same professions.

Cuba has never possessed a school for engineers, and the few who followed that profession in any of its branches have been obliged to pursue their studies in foreign lands.

For some years the necessity for good engineers and surveyors has been noticed more and more, as the sharp competition between cane and beet sugar has demonstrated the wisdom of carefully and scientifically directing both the agricultural and manufacturing branches of sugar production.

In brief, with the exception of law and medicine, all the professions offer a wide and attractive field for active and talented men.

CHAPTER V.

PUBLIC WORKS AND PUBLIC INSTRUCTION.

IT is an undisputed fact that the construction of public works is a good test of the progress of the country, because it contributes directly to agricultural, commercial and economic development, facilitating the means of communication between the producer and the consumer. Public works open new ports, improve the facilities established at old ports, redeem wild land, and throw open to cultivation large tracts of land that would otherwise remain uncultivated. Public works furthermore aid the navigation of the high seas and contribute to the efficiency and safety of the coastwise trade by means of buoys, lights and light-houses.

The first railroad within the Spanish dominion was constructed in Cuba, and most of the public works now extant are the result of the efforts of the Real Junta de Fomento, a corporation composed of persons representing every branch of the public service, who discharged their duties without pay. In 1854 military engineers of the army were placed in charge of the public works of the island, and in 1866 they were replaced by civil engineers, but the latter performed little work in the way of new construction because the amounts designated for this purpose in the annual budget were very small and often could not be secured for the prosecution of the works for which they had been designated.

The railways that have been built in Cuba were constructed by stock companies without any subsidy from the government, with the exception of the line from Havana to Guines, built by the Real Junta de Fomento and afterwards sold to the Compania de los Caminos de Hierro de la Habana, and the line which unites the city of Puerto Principe and Neuvitas. A company composed of ten persons purchased the latter line at public sale for the sum of $1,600,000.

There are, at present, something over 1,000 miles of railway in operation throughout the island, but they are under different management and do not work together as would one system, which would better contribute to the general welfare. There are also over 800 miles of private lines, constructed for the purpose of transporting the products of sugar planatations either to ports on the coast or to the public railways, and in some cases for the purpose of uniting neighboring plantations. The electric tramway system has just been introduced into the island and there are now forty miles in operation.

The three public lines belonging to English companies, the Sagua la Grande, the Caibarien and the line from Cienfuegos to Santa Clara, were formerly independent, but have now been combined under the name of the Cuban Central Railways. The Western Railway, from Havana to Pinar del Rio; the Urban Line of Havana, the tramway from Regla to Guanabacoa, and in part the United Railways Company of Havana, to which an English house loaned large sums of money, have their general direction in the city of London, with a subordinate board of directors in Havana.

The Cuba Company is just completing an extremely important railway. This enterprise is one that will contribute more to the development and prosperity of Cuba than any other yet attempted, because, in addition to the competition it will afford, which must result in benefit to the public, it will open communication from one end of the island to the other, as well as to the chief ports on both the north and south coasts. It will furthermore open up great regions of the most fertile land in the interior of the island, not yet devoted to agriculture owing to a total lack of communications. The road will also permit the transportation of timber from the large forests along the line.

One hundred and sixty-two miles of highways have been constructed in Cuba, about equally divided between the provinces of Havana and Pinar del Rio. Other roads are in process of construction in Matanzas, Santa Clara, Puerto Principe and Santiago de Cuba. Extensive repairs have also been made since the cessation of hostilities. The bridges and culverts on the highways, which were destroyed during the war, are also being rebuilt or repaired, as may be seen from the following table:

FROM JANUARY 1, 1899, TO APRIL 1, 1902.

	Built.	Building.	Repaired.	Being Repaired.	Planned.
Havana	9	3	2	..	1
Pinar del Rio	4	2	14	3	11
Matanzas	4	..	..	..	3
Puerto Principe	3	2	12	..	5
Santa Clara	37	5	1	..	7
Santiago de Cuba	2	4	..	..	2
Total	59	16	29	3	29

The government has given special attention to bridge and road building, because the lack of means of communication in the island has always been a serious drawback to the development of agriculture in many localities, giving just cause for complaint on the part of the people, who could not carry their crops to market without great expense. Road building in tropical countries is no light task. Although there is no frost to be feared, the most substantial construction of both the road-bed and the bridges is necessary because of the destructive influence of the heavy and often sudden rainfalls.

At Cardenas the port is being deepened so that ocean-going vessels may load and unload without lightering their cargoes, a process which is both expensive and injurious to many classes of merchandise. At the port of Gibara, in the province of Santiago de Cuba, and at Cabanas, in the province of Pinar del Rio, the government is constructing piers so that vessels may lay alongside in order to load and unload. All these improvements will directly benefit both the agriculture and the commerce of the island, making it easier and cheaper to transport goods both ways between the producer and the consumer.

The sewerage of the city of Havana, although a matter of municipal administration rather than a government work, is of so much importance that mention thereof may not be considered out of place. The subject has been carefully studied by the engineers of the United States Army and a plan has been adopted which will cost something like $15,000,000. Bids for the construction of the work have been invited. The municipality, however, has had some difficulty in placing the bonds, but it is the intention to begin the work without delay. This will add materially to the sanitary condition of the already healthy city of Havana, making it one of the most healthful tropical cities of the world. Indeed, it will be difficult for the cities of the temperate zone to equal Havana in this respect.

EDUCATION.

The public school system may properly be classified under the head of public works, for it is of great importance and will have much to do with the future welfare of the new republic. Schools are cheaper than armies, and contribute more to the peace of the country than fortresses, and under the new régime the teacher will be honored as well as the general who fought for independence.

The schools are not, as in the United States, creatures of the several States, but are supported from the general, or insular, treasury. It is the intention of the new government to adopt some plan whereby the cities and towns of Cuba may be supplied with an adequate number of modern school buildings and the necessary appliances in the way of furniture and supplies.

While much remains to be done, yet a commendable start has been made in providing an opportunity for every child in the Island of Cuba to secure at least a common school education. The provisional government, during its adminstration of public affairs, did everything possible to improve the condition of the school system of the island. Prior to American occupation there was, truthfully speaking, practically no system of public instruction.

In the United States there is a saying, "As poor as a church mouse," to indicate extreme poverty, and in Cuba there is a saying, "Hambriento como un maestro de escuela"("As hungry as a school teacher") —because teachers were not only poorly paid, but their miserable salaries were always in arrears. In some well-known instances these salaries were four and one-half years past due, and the poor teachers were forced to all manner of expedients in order to live. It is not surprising, under these circumstances, that patriotism and loyalty to the government were not prominent features of the curriculum. All this is now changed. The teachers are well paid, their position in society and influence in the community have advanced, and many young ladies, who formerly would not have dreamed of teaching, are now awaiting an opportunity to apply for a vacated position.

When Spanish control ceased there were but 312 primary schools in the entire island. At present this number has been increased to 3,312. This means that there are over 3,000 teachers employed, who receive their generous salaries regularly and promptly. When Spain ruled there were not more than 28,000 pupils of both sexes attending school, while to-day over 150,000 are receiving instruction at the expense of the State, without taking into account the private schools that have been established. In the city of Havana alone, according to the last school enumeration, over 12,000 pupils were attending private schools.

The people of the island realize the important benefit to be derived from the newly established system of public instruction and view with enthusiasm the efforts put forth to establish education on an enduring basis.

CHAPTER VI.

BANKS AND BANKING.

THE banking facilities existing in Cuba at the present time are inadequate. Under the tenure of Spain, no effort was made to afford the Cubans an opportunity to bank their savings, nor were the usual channels found in other countries for the distribution of money given attention.

The currency of the island was subject to radical inflation, and when the American government assumed charge at the close of the war with Spain one of the first steps taken was to establish a responsible bank and to give a fixed value to the money of the island.

The present National Bank of Cuba is the result. It is the government bank for the island and has its head office in Havana.

On July 21, 1898, immediately following the occupation of Santiago by the American troops, the President of the United States appointed the predecessor of this bank, the North American Trust Co. of New York, fiscal agent of the United States, and it continued to act as such until July 18, 1901, when the assets and business were transferred to the National

Bank of Cuba, since which time the latter bank has been sole depository of insular funds for the island of Cuba.

The bank was organized with a paid-up capital of $1,000,000, United States currency. It purchased part of the assets of the North American Trust Co., and liquidated that company's business in Cuba.

The bank has branches established at Santiago de Cuba, Matanzas, Cienfuegos, Cardenas and Manzanillo, and correspondents at every other important point in the island.

The two principal conditions from which the financial situation in Cuba suffered were, first, scarcity of money in circulation, and, second, the lack of banking facilities outside the city of Havana, the consequent immobility of capital and the difficulty of transferring money and credit from one point to another.

The bank sought to meet these conditions by establishing its branches at the points mentioned, through which the government makes its deposits and disbursements for the several localities, and which encourage local deposits, which are available for local loans. In this way exchange operations have been facilitated, giving mobility to capital and affording opportunities for individual and company deposits in the bank, instead of keeping specie hoarded in safes as theretofore.

The bank has a savings department, which serves to bring money into circulation, in addition to the bank's capital.

Local loans are made and used for the development of business in each section. The surplus of one section is transmitted for loans in other sections where there is a demand for money. This prevents the money from being concentrated at Havana and gives facilities for the development of the several sections of the island instead of one particular section. The bank has correspondents all over the world, and does the principal part of the exchange business with China. J. P. Morgan & Co. are the bank's correspondents in New York.

The bank's capital of $1,000,000 is divided into ten thousand shares of the par value of $100 each, United States currency. This stock is held principally in the United States, although a large amount is held in Cuba.

ROYAL BANK OF CANADA.

The agency of the Royal Bank of Canada (head office at Halifax, Nova Scotia), established in Havana in 1899, has rapidly gained the confidence of the community, and is now ranked among the most important banking concerns doing business in the island. This institution, which is well and favorably known in the United States and Canada, has more than forty branches in those countries, including one in New York City, which gives it exceptional facilities for handling transactions between that city and Havana. The bank also has correspondents in the principal cities of Europe and in the East, among whom may be named the Bank of Scotland, the Credit Lyonnais, the Deutsche Bank, and the Hong Kong and Shanghai Banking Corporation.

THE SPANISH BANK.

This institution, known as "El Banco Espanol de la Isla de Cuba," is a stock company, and was incorporated on April 9, 1856, with a capital stock of $8,000,000, divided into 80,000 shares of a par value of $100 each. It has a reserve fund of $456,000. During the Spanish sovereignty it enjoyed the support of the government, with which it negotiated many large transactions, and it can be considered a very solid and reliable corporation.

BANK OF COMMERCE.

At a meeting of stockholders of this bank, held on April 14, 1902, in which 28,000 shares were represented, the bank (which had suspended business) decided to resume. Its capital stock was fixed at $500,000, Spanish gold, divided into 10,000 new shares of $50 each. This institution in former times transacted an extensive business with sugar planters and tobacco growers and did a large business in loans.

COLONIAL LOAN AND DEPOSIT ASSOCIATION OF BUFFALO, N. Y., U. S. A.

This association has an authorized capital of $20,000,000, and has for its object the bringing together of those people who have money to invest and those who want to borrow; to furnish a safe and profitable system for investing money in both large and small sums in a manner which will assist and encourage saving. Stock in this association is divided into shares of $100 each.

In addition to the regular banks there are several private firms whose business is principally that of loaning money on securities. Among these may be mentioned the banking houses of Zaldo & Co., Upmann & Co., and Gelats & Co., all of Havana.

The legal monetary system of Cuba is patterned after that of Spain. The "centen," or twenty-five "peseta" piece, is of gold, and has an average value of $4.90 American money. The silver coins are the "peso," "medio peso," "peseta," "real" and "medio real," occupying the same relative positions as the American dollar, half dollar, quarter, dime and nickel. There also are the usual minor coins of bronze.

CHAPTER VII.

MANNER AND COST OF LIVING.

IT is no easy task to give a complete idea of the cost and manner of living in Cuba. These are subjects about which it is impossible to generalize, for in Cuba, as in all other countries, every person is in this respect a law unto himself. The necessities of one man are considered luxuries by another. The Cubans as a class are cheerful, enjoy society, spend freely and live as well as their means will allow. Judged from the American scale of prices, certain things are very expensive in Cuba, while others, which in the United States cost a good deal of money, may be had for nothing, as will be explained.

The habits and customs of good society in Havana, which is a cosmopolitan city, do not differ very much from those of other countries. The love of travel, largely indulged by the wealthy merchants and planters, has resulted in identifying their habits with those which obtain in America and Europe, and has introduced into the island almost everything conducive to comfort and good living. Other classes of society, not so favored by fortune, who have been deprived of the pleasures and advantages of travel, have not on that account remained strangers to progress and social culture, for they have learned to adopt, so far as their means would permit, the advantages introduced by their more fortunate neighbors and friends.

The principal families provide themselves with clothing and objects of art and fashion during their frequent visits to foreign lands, or order and receive the same by express, so that at balls, at the opera, and on the public drives, the beauty of Havana may be seen robed in elegant costumes from the noted establishments of Paris and New York, while Havana itself is not lacking in fashionable and artistic modistes, who keep in close touch with the latest decrees of the world of fashion.

The question of securing good domestic service is a vexing one in Cuba, just as it is everywhere, and as it has been ever since society became so complex that the housewife could not attend to all the demands upon her head, hands and heart. While the older families, well acquainted with the language, markets and customs of the country, have solved this question to their satisfaction, the stranger coming to reside in Cuba is not so fortunate. Here, as everywhere, there are good and bad servants, and while really good servants are in demand, those of the other class are most in evidence and are apt to fall to the lot of the stranger. Since the war wages of all kinds have advanced and, as in tropical lands it is customary to have more servants than in the temperate zone, this becomes somewhat of a burden.

The preferred cooking is French, although there may be found on all good tables a mixture of French, Spanish and "Creole" dishes, as the Cuban cooking is called. Americans coming to Cuba will do well to realize that if they insist on having the same sort of table they had in the United States, everything must be imported, and, therefore, will be expensive, but when they learn to take advantage of the native products that are to be found in the markets, the comforts of the table will not be diminished, but oftentimes improved, and at the same time a decided saving in household expenses will be made.

Life in Havana is quite expensive, for hotel charges, house rents, and, indeed, everything consumed is dear. Outside of Havana, in second-rate towns, where fashion is not so pronounced and habits are more moderate, expenses are less and living is much cheaper.

In the country this condition is completely changed. Excepting the great sugar plantations, where the owners have carried with them all their customary habits and necessities, the people live well, but modestly; they know nothing of privations, neither are they accustomed to elegance. The Cuban farmer, when he has his land producing crops, with his chickens, cows and hogs, his plantings of bananas, sweet potatoes, yuccas, yams and corn, has an easy life assured him, and should he devote himself to raising crops of greater importance it is because of the natural desire which all men possess to better their condition.

If to the above is added the fact that the country people build their own houses, for the beautiful palm provides everything necessary therefor, from the posts and boards, which the trunk furnishes, to the bark and leaves to make walls and roofs, it is easy to understand that in this country, where land is cheap, living is cheap for those who devote themselves to farming with the sole object of making a living.

CHAPTER VIII.

TRANSPORTATION FACILITIES.

THE most important question that confronts a prospective traveler, after he has once made up his mind to visit a foreign country, is how to reach his proposed destination. The proximity of Cuba to the United States and the fact that the major part of her products find a ready market in the latter country have created a really important and growing system of steamship connections.

The four principal companies, the Ward, Munson, Peninsular and Occidental and Morgan lines, maintain an almost daily service, and it is possible to travel to Cuba direct from five American ports—New York, New Orleans, Mobile, Miami and Port Tampa. The vessels composing the various fleets are commodious, well-manned and equal in service to the majority of the great ocean liners.

Of the various companies, the New York and Cuba Mail Steamship Co., familiarly known as the Ward Line, from the firm name of its general agents, James E. Ward & Co., probably has been longest established. Years before steam as a motive power for vessels came into general use, James E. Ward and Henry P. Booth got together a fleet of sailing packets and formed the nucleus of the present company. In the good old days of the sailing packet, Cuba was, in the matter of time, a long way from New York, and but comparatively few people made the voyage for pleasure. The products of the island, however, such as sugar, tobacco and coffee, found their best market in the States, and in time it became necessary to supersede the sailing packets by steamers of larger carrying capacity and greater speed. From then until the present time the company has steadily progressed. It now owns and operates in its Cuban and Mexico trade fifteen full-powered steamers of the most modern construction, built expressly for its service. In the fittings of these vessels the comfort of the passengers has been most carefully considered throughout. The first cabin staterooms are all on the main and promenade decks and are equipped with all the luxuries of the present day ocean palace. The Ward Line maintains an express service between Havana and New York, the time between ports being about four days. In addition to the regular Saturday sailings other steamers leave New York every Thursday. Connections are made in Havana for southern coast ports. The vessels of the Ward Line are also provided with facilities for the handling of live stock, having large and spacious decks for cattle, and specially provided stalls for valuable stock. The steamers are also fitted with well-ventilated between-decks for the handling of vegetables and perishable freight.

Among the important lines connecting the United States and Cuba is the Munson. This company's large fleet of well-appointed steamers gives adequate transportation to the Cuban ports and affords the tourist, home-seeker, planter or investor a favorable opportunity of inspecting the country and cities in a leisurely and intelligent manner. No other steamship company touches at so many ports of the island. Two distinct services are maintained throughout the year by the Munson Line. They are designated, respectively, the New York and the Mobile services.

The New York service touches all the important points of the North Coast of Cuba east of Havana. Sailings from New York are on Saturday, and are direct to Matanzas, then to Cardenas, Sagua, Caibarien, Nuevitas, Puerto Padre, Gibara and Baracoa. Returning, steamers touch again such coast ports as may be necessary, and sail from Matanzas to New York direct Thursdays, arriving at New York on Mondays, the round voyage thus occupying three weeks and two days.

The steamers in this service are kept in a high state of efficiency as regards the carrying of both passengers and freight. Particular attention is paid to maintaining the table.

As the steamers are under the Cuban flag, they can, of course, engage in coastwise traffic in Cuba; consequently, they are availed of largely for such traffic, both in freight and passengers, between the ports on the schedule. As a rule, the steamers remain in each port one day at least, and the run from port to port is made over night. This makes the trip along the coast very attractive for tourists, as, with a new locality every day or two and a full rest over night, they secure a maximum of sight-seeing on a minimum of fatigue. This coastwise trip is also valuable to traveling representatives of business houses, as the trip over night in a comfortable stateroom is much more satisfactory than going from port to port by rail.

The Mobile service of the Munson Steamship Line serves all the principal ports in the island of Cuba, both on the north and south sides, there being at present about eight sailings per month. There is a weekly freight and passenger service from Mobile to Havana, and the same steamers touch every four weeks at Matanzas, Cardenas and Caibarien. Steamers sail every other week for Cienfuegos, Santiago, Manzanillo and Guantanamo. Other ports in the island are touched by Mobile liners whenever sufficient cargo offers.

Steamers from Mobile to Havana and other northside ports offer excellent accommodations for about twenty-five first-class passengers, and through tickets are sold in connection with the regular New York liners. These steamers sail regularly from Mobile to Havana, and also from Havana to Mobile, every Friday at noon.

Both passenger and freight services are maintained in connection with the Mobile & Ohio Railway, the Southern Railway and the Louisville & Nashville Railway. The line has traffic agreements with all three of these roads, and is, therefore, able to offer advantages to shippers and receivers, by giving them through bills of lading to and from Cuba for all interior cities in the South, West and Central States. Pineapples, vegetables and other perishable cargoes are carried from Havana to the interior cities, such as Chicago, Cincinnati, St. Louis and others, in fast time.

The transportation of live cattle of all kinds is made a specialty by this company. It has ten steamers, particularly equipped with artificial ventilation, and other special accommodations for the transportation of live cattle, horses, mules and other stock. These steamers have already carried very large quantities of cattle from ports in Venezuela, United States of Colombia, Honduras, Central America, Mexico, and the Southern ports of the United States to ports in Cuba. A service from Halifax to Havana, with sailings every fortnight, is also maintained by the Munson Line during the major portion of the year. The fleet numbers about sixty vessels, and the steamers which are placed in each one of the lines are built especially for the company or selected for the particular trade in which they are to be placed.

Facilities for reaching Cuba in speedy and finelyappointed steamers are also provided by the Peninsular and Occidental Steamship Co., which maintains an almost daily express service between Port Tampa and Miami, Florida, and Havana, and the Morgan Line, which conducts a satisfactory service between New Orleans and Havana. To those who prefer a brief ocean trip, these lines offer attractive inducements. The schedule of rates are in proportion to those maintained by the companies previously mentioned.

In addition to the above steamship companies, the following lines connect Cuba with the United States and other countries:

Brenner Line (New York).—Freight service between Havana and New York.

Compania General Transatlantique.—Regular service between French and Cuban and Mexican ports.

Cuban Line.—Monthly from Antwerp to Porto Rico and Cuba; freight and passengers.

Earn Line.—Service monthly from Cuba and West Indian ports to Philadelphia.

Independent Line (New York).—Regular service between New York and Havana, Matanzas, Cardenas and Manzanillo.

La Compania Transatlantica Espanol.—Antilles and Mexico Line, three trips a month to and from the Antilles, Progreso and Vera Cruz; from Barcelona to Malaga, Cadiz, Porto Rico, Havana, Progreso and Vera Cruz; from Liverpool to Havre, Santander, Corunna, Porto Rico, Havana, Progreso and Vera Cruz; from Barcelona to Malaga, Cadiz, Las Palmas, Porto Rico, Havana, Progreso and Vera Cruz.

La Flecha Navigation Co.—From Antwerp to Havana, monthly; passengers and freight.

Linea de Vapores Transatlanticos.—Between Havana, Santa Cruz de Teneriffe, Cadiz and Barcelona.

Hamburg-American Line.—Steamers between Hamburg and Havana twice a month.

Serra Line.—Service monthly for passengers and freight, from Antwerp to Havana.

Waydell & Co.'s Line.—Monthly from New York to Matanzas and north Cuban ports; also monthly to Santiago de Cuba and Cienfuegos.

A number of English, German, Norwegian and other "tramp" steamers also participate in the carrying trade of the Island of Cuba.

In addition to the Munson and Ward Lines, a coastwise service is maintained by the Compania Cubana, Herrera Steamship Co., Menendez Steamship Co. and the Vuelta Abajo Steamship Co., all of which trade between the various Northern and Southern coast ports.

RAILWAYS.

In comparison with even the newer and least settled of the United States, Cuba's railway facilities are woefully inadequate. With an area almost equal to that of New York State, she has barely 1,200 miles of railway open to traffic. This condition is due to the incompetence of Spain's colonial government, a government which made the serious mistake of grossly overtaxing railway material, and belittling the necessity of inter-communication between the coast ports and the interior of the island.

A decided change for the better is already taking place. The American occupation of the island made possible the formation of the Cuba Company, of which Sir William Van Horne, the builder of the Canadian Pacific, is the president and principal promoter. The Cuba Company, in the face of great difficulties, difficulties enhanced by the uncertain form of government, has constructed a line between Santa Clara, capital of the province of the same name, and Santiago de Cuba. The railway runs through a wonderfully rich and fertile country and is the first to tap the vast interior plains and woodlands of the island. It is the intention of the company gradually to extend branches on either side to the principal towns and important agricultural districts. Along its main line are to be found great areas of land of the richest description, well watered, and, in most cases, well wooded, suitable for sugar-cane, tobacco, Indian corn, cotton, coffee, cacao and all the fruits of tropical and sub-tropical regions. Other districts of this vast region are peculiarly adapted to cattle, the grasses being luxuriant and highly nutritious. Besides the main line between Santa Clara and Santiago, the Cuba Company owns branches to Sancti Spiritus, Holguin, Panupa, Nipe Bay, and controls a leased line to Jucaro and San Fernando. It also has direct connections with Havana and the western end of the island.

The other railways of Cuba, with their mileage, are:

United Railway of Havana	246.5	miles.
Western Railway	109.5	"
Marianao and Havana Railway, Limited	9	"
Matanzas Railway	172.5	"
Cardenas and Jucaro Railway System	206	"
Cuban Central Railway, Limited	186	"
San Cayetano and Vinales Railway (narrow gauge)	15	"
Trinidad Railway	22	"
Jucaro-Moron Railway	40	"
Puerto Principe-Nuevitas Railway	24.25	"
Tunas and Sancti Spiritus Railway	24.25	"
Guantanamo Railway	22.75	"
Gibara Holguin Railway	20	"
Santiago Railway	33	"

HIGHWAYS.

The public highways of Cuba are not at all adequate to the needs of the people, but it is the intention of the Cuban Government to devote considerable attention and money to the betterment of the roadways throughout the island. In the more populous districts a system of road-making adapted to tropical requirements will be inaugurated without delay.

EXPRESS COMPANIES.

The carrying business of Cuba has been greatly improved within the past few years by the introduction of the American system of express forwarding. Early in 1898 the Cuban and Pan-American Express Co. was incorporated in New Jersey to do a general express and forwarding business between Cuba and the United States. The service was rapidly extended to all parts of the island. The company's agents are to be found at the principal seaports and cities and at all railway stations in Cuba. While its efforts are devoted principally to the transportation of packages between the different cities of the island, it acts also as general forwarders to all parts of the world, and has numerous side branches, such as the custom house, brokerage department, the purchase and commission department and departments for money orders, drafts and money transfers by cable, which extend its field of usefulness. A new department, recently organized, is designed to provide facilities for the handling of baggage between all steamship wharves and railroad stations and the hotels or residences of travelers.

The Southern Express Co. operates a service to and from all Cuban points as an extension of its United States system. The encouragement to trade between the two countries, which has been given by the great improvement in facilities for the direct shipment of packages, etc., has been very marked, and the increase undoubtedly will be much greater in the future than it has been heretofore.

CHAPTER IX.

COMMERCIAL AND TRADE-MARK LAWS.

SO far as respect for and obediance to the law are concerned, Cuba is fully entitled to a place with the most highly civilized among the nations. Life and property are held quite as sacred and are as completely protected by legal safeguards in the island as in the United States. The laws concerning fulfillment of contracts and providing for the recovery of debts are full and explicit, and give every necessary assurance to those engaged in business or commerce with the island. The commercial code in force is that of Spain, with such modifications as have been adopted by the provisional government. The more important provisions contained therein are given in the following pages.

AGENTS AND ATTORNEYS.

Undisclosed Principal.—A contract made by an agent in his own name shall bind him directly with the person with whom it was made; but if the transaction was made for the account of the principal, the other contracting party may bring his action against the agent or against the principal.

Authority.—The powers of attorney granted an agent shall be considered in force until they are expressly revoked, notwithstanding the death of the principal or of the person from whom they were received in due form. Acts and contracts made by the agent shall be valid with regard to his principal, provided they are prior to the time the former is informed by legitimate means of the revocation of the power of attorney or of the alienation of the establishment. They shall also be valid with regard to third persons, until the revocation of the power of attorney.

Death.—Agency is terminated by the death of the agent or by his incapacity; but not by the death or incapacity of the principal, although it may be revoked by his representatives.

Principal Liable for Fines.—The fines which an agent may incur by reason of violations of the fiscal laws and regulations of the public administration in his management as agent shall be immediately enforced against the property he manages.

ASSIGNMENT OF CLAIMS.

Transfer of Credits.—Commercial credits, which are not negotiable nor payable to the bearer, may be transferred by the creditor without requiring the consent of the debtor, it being sufficient that the transfer be communicated to him. The debtor shall be obligated to the new creditor by virtue of the notification, and from the time said transfer is made the only legitimate payment shall be considered that made to the latter.

BILLS OF EXCHANGE.

Presentation.—Drafts drawn in Cuba at sight, or at a period counted from sight, must be presented for collection or acceptance within forty days from their date.

Drafts drawn at sight, or at a period counted after sight, in foreign countries on places in the territory of Cuba shall be presented for collection or acceptance within the forty days following their introduction in the republic, and those drawn after date at the times stipulated therein.

Drafts drawn at a period counted after the date thereof need not be presented for acceptance by their holders.

The holder of a draft may, if he deems it convenient to his interests, present it to the person on whom it is drawn before it falls due, and in such case the latter shall accept it or shall state the reasons for his refusal to do so.

Acceptance.—The acceptance of a draft must take place or be refused on the same day on which the holder presents it for this purpose, and the person of whom acceptance is demanded cannot retain the draft in his possession under any pretext whatsoever.

Protest.—In case the acceptance of a bill of exchange is refused it shall be protested, and in view of said protest the holder shall have a right to require the drawer or any one of the indorsers to secure the amount of the draft to his satisfaction, or to deposit the amount thereof, or to reimburse him for the costs of the protest and of the re-exchange, discounting the legal rate of interest for the period which still is to elapse until it falls due.

Action for Security.—An action may be brought to compel the drawer and indorsers to give security for the payment of a bill protested for non-acceptance.

Blank Indorsement.—If statement of the date is omitted in the indorsement, the ownership of the draft shall not be transferred, and it shall be understood as simply a commission for collection.

Maturity.—All drafts must be paid on the day they fall due, before sunset, without any days of grace. Bills payable at a fair are due the last day of the fair.

If the day on which it falls due should be a holiday, the draft shall be paid on the previous day.

Interest.—Bills of exchange protested by reason of non-payment shall earn interest in favor of the holders thereof from the date of protest.

Action for Payment.—The action arising from bills of exchange to recover, in the respective cases, of the drawer, acceptors or indorsers, the payment or reimbursement shall include an attachment, which must be issued, in view of the draft and of the protest, without further requisite than the judicial acknowledgment of their signatures by the drawer and indorsers proceeded against. A similar action may be brought against the acceptor to compel him to make the payment. The acknowledgment of the signature shall not be necessary to carry out the attachment against the acceptor when no charge of forgery has been made in the instrument of protest for non-payment.

BILLS OF LADING.

Shipper and Carrier.—The legal instruments of the contract between the shipper and the carrier shall be the bills of lading, by the contents of which all disputes which may arise with regard to their execution and fulfillment shall be decided, without admission of other exceptions than forgery or material errors in the drafting thereof.

After the contract has been consummated the bill of lading issued shall be returned to the carrier, and, by virtue of the exchange of this certificate for the article transported, the respective obligations and actions shall be considered as canceled, unless in the same act the claims which the contracting parties desire to reserve are reduced to writing.

If, in case of loss or for any other reason whatsoever, the consignee cannot return, upon receiving the merchandise, the bill of lading subscribed by the carrier, he shall give said carrier a receipt for the goods delivered, this receipt producing the same effect as the return of the bill of lading.

Bills of lading will give rise to a most summary action or to judicial compulsion, according to the case, for the delivery of the cargo and the payment of the freightage and proper expenses.

BROKERS.

Appointment and Powers.—The services of brokers may be rendered by Cubans and foreigners, but licensed brokers only may issue certifications. Licensed brokers shall have the character of notaries in all that refers to the negotiation of public instruments, industrial and commercial securities, merchandise and other commercial acts included in their office. They shall keep a registry book, entering therein in proper order, separately and daily, all the transactions in which they may have taken part, being, moreover, permitted to keep other books with the same formalities. The books and policies of licensed brokers shall be admitted as evidence in suits.

Removal from Office.—Brokers may be removed from office by the government for breach of duty. They shall, moreover, be civilly liable for damage caused by any neglect of the obligations of their office.

Special Agents.—Merchants may intrust to other agents besides brokers the constant management, in their name and for their account, of one or more of the branches of the business they are engaged in by virtue of a written or verbal agreement, associations including such agreements in their by-laws, and private parties making them known by public notices or by means of circulars to their correspondents. The acts of these special employees or agents shall only bind the principal with regard to the transactions proper to the branch of business which has been intrusted to them.

CARRIERS.

Must Keep a Register.—Transportation agents shall be obliged to keep a special registry, in which there shall be entered, in progressive order of numbers and dates, all goods the transportation of which is undertaken, stating the circumstances for the respective bills of lading.

Lien on Goods for Freight.—The goods transported shall be specially obligated to answer for the transportation charges and for the expenses and fees caused by the same during transportation, or until the time of their delivery.

This special right shall be limited to eight days after the delivery has been made, and after said prescription the carrier shall have no further right of action than that corresponding to an ordinary creditor.

Intermediate Carriers.—A carrier who delivers merchandise to a consignee by virtue of agreements or combined services with other carriers shall assume the obligations of the carriers who preceded him, reserving his right to proceed against the latter if he should not be directly responsible for the fault which gives rise to the claim of the shipper or of the consignee. The carrier making the delivery shall also assume all the actions and rights of those who have preceded him in the transportation. The sender and the consignee shall have a right of action against the carrier who executed the transportation contract, or against the other carriers who received the goods transported without reserve. The reservations made by the latter shall not exempt them, however, from the liabilities they may have incurred by reason of their own acts.

Goods to be Forwarded by First Shipment.—Should no period within which goods are to be delivered be previously fixed, the carrier shall be under obligation to forward them in the first shipment of the same or similar merchandise which he may make to the point of delivery, and should he not do so, the damages occasioned by the delay shall be suffered by him. Damages for delay may be liquidated in the bill of lading.

Goods Must be Delivered on Time.—If a period has been fixed for the delivery of the goods, it must be made within the same; otherwise, the carrier shall pay the indemnity agreed upon in the bill of lading, neither the shipper nor the consignee being entitled to anything else.

When May Refuse to Transport Goods.—Carriers may refuse to accept packages which appear unfit for transportation; and if said transportation is to be made over a railroad, and the shipment is insisted on, the company shall carry it, being exempt from all liability if it so states in the bill of lading.

Goods Transported at Risk of Shipper.—All damages and impairment suffered by goods in transportation, by reason of accident, act of God, or by virtue of the nature or defect of the articles, shall be for the account and risk of the shipper. The proof of these accidents is incumbent on the carrier.

Carrier Liable for Negligence.—The carrier shall be liable for the losses and damages arising from the causes mentioned in the foregoing paragraph, if it is proved that they occurred on account of his negligence, or because he did not take the precautions usually adopted by careful persons, unless the shipper committed fraud in the bill of lading, stating that the goods were of a class or quality different from what they really were.

Goods Rendered Useless.—If, on account of injury, goods are rendered useless for purposes of sale or consumption in the manner proper to the same, the consignee shall not be bound to receive them, and may leave them on the hands of the carrier, demanding payment therefor at current market prices.

If, among the goods damaged, there should be some in good condition and without any defect, whatsoever, the foregoing provision shall be applicable with regard to the damaged ones, and the consignee shall receive those which are perfect, this separation being made by distinct and separate articles. The same provision shall be applied to merchandise in bales or packages, with distinction of the packages which appear perfect.

Value of Lost Goods Determined by Bill of Lading.—The value of the goods, which the carrier must pay in case of their being lost or mislaid, shall be fixed in accordance with the declaration contained in the bill of lading, no proofs being allowed on the part of the shipper that there were among the goods declared therein articles of greater value.

Disputes.—If there should occur doubts and disputes between the consignee and the carrier with regard to the condition of goods transported at the time of their delivery to the former, the said goods shall be examined by experts appointed by the parties, and a third one, in cases of disagreement, appointed by the judicial authority, the result of the examination always being reduced to writing; and if the persons interested should not agree to the report of the experts, and could not reach an agreement, said authority shall have the merchandise deposited in a safe warehouse, and the parties interested shall make use of their rights in the proper manner.

Refusal to Receive Goods.—Should the consignee not be at the domicile indicated in the bill of lading, or should he refuse to pay the transportation charges and expenses, or to receive the goods, the deposit of said goods shall be ordered by the municipal judge, where there is no judge of first instance, to be placed at the disposal of the shipper or sender, without prejudice to a third person having a better right, this deposit having all the effect of a delivery.

Limitation of Claim Against Carrier.—Within the twenty-four hours following the receipt of the merchandise a claim may be brought against the carrier on account of damage found therein on opening the packages, provided that the indications of the damage giving rise to the claim cannot be ascertained from the exterior of said packages, in which case claim would only be admitted on the receipt of the packages.

After the periods mentioned have elapsed, or after the transportation charges have been paid, no claim whatsoever shall be admitted against the carrier with regard to the condition in which the goods transported were delivered.

CHECKS.

Presentation.—The holder of a check must present it for payment within five days of its issue, if drawn on the same place, and within eight days, if drawn on another one. The holder who allows this period to elapse shall lose his right of action against the indorsers, as well as against the maker, if the funds deposited with the person on whom it is drawn should disappear because the latter has suspended payments or is a bankrupt. The period of eight days fixed in the foregoing sentence for checks issued from place to place shall be understood as extending to twelve days after its date for those drawn abroad.

CONTRACTS.

Form.—Commercial contracts shall be valid and serve as the basis of an obligation and cause of action in suits, whatever may be the form or in whatever foreign language they are executed, the class to which they correspond and the amount involved, provided their existence is proved by some of the means established by the civil law. However, the declaration of witnesses shall not in itself be sufficient to prove the existence of a contract, the consideration of which exceeds 1,500 pesetas (about $300), if no other evidence is adduced.

Telegraphic correspondence shall only be the basis of an obligation between contracting parties who have previously admitted this medium in a written contract, and provided the telegrams fulfil the conventional conditions or tokens which may have been previously fixed by the contracting parties.

There shall be excepted from the foregoing contracts executed in a foreign country in which the law requires certain instruments, methods or formalities for their validity, although not required by Cuban law.

By Correspondence.—Contracts executed through correspondence shall be completed from the time an answer is made accepting the proposition or the conditions by which the latter may be modified.

By Agent or Broker.—Contracts in which an agent or broker mediates shall be completed when the contracting parties shall have agreed to their clauses.

Time of Performance.—Obligations which do not have a limit previously fixed by the parties, or by the provisions of this code, shall be demandable ten days after having been contracted, if they can only be the basis of an ordinary action, and on the next day if an execution lies.

Delay in Performance.—The effects of tardiness in compliance with commercial obligations shall begin:

(1) In contracts in which a day is fixed for their compliance by the will of the parties or by law, on the day following the one they fall due.

(2) In contracts in which no such day is fixed, from the day on which the creditor legally summons the debtor or makes known to him the declaration of loss and damage made against him before a justice, notary or other public official authorized to admit the same.

FACTORS OR COMMISSION MERCHANTS.

Liability.—When the factor transacts business in his own name, it shall not be necessary for him to state who is the principal, and he shall be directly liable, as if the business were for his own account, to the persons with whom he transacts the same, said persons not having any right of action against the principal, nor the latter against the former, the liabilities of the principal and the factor to each other always being reserved.

Refusal to Accept Commission.—In case a factor should refuse the commission intrusted him, he shall be obliged to communicate his decision to the principal by the quickest means possible, being required in any case to confirm it by the first mail after receiving the commission.

He shall also be obliged to exercise due care in the custody and preservation of the merchandise which the principal may have forwarded to him until the latter appoints a new agent, in view of his refusal, or until, without awaiting a new designation, the judge or court has taken possession of the goods at the request of the agent.

Non-compliance with any of the obligations established in the two foregoing paragraphs shall cause the agent to incur the liability of indemnifying the principal for the loss and damages which may arise.

Cannot Delegate Authority.—The factor shall personally discharge the commissions he may receive, and cannot delegate them without the prior consent of the principal unless he has previously been authorized to make the delegation; but he may, under his liability, make use of his employees in the routine transactions, which, according to general commercial customs, are intrusted to the same.

If the factor should have made a delegation or substitution with the authority of the principal, he shall be liable for the acts of the substitute, if the person to whom the business was delegated was selected by him, being otherwise released from liability.

Transacting Business at Prices Not Authorized.—A factor who, without express authorization of the principal, should transact some business at prices or conditions which are more onerous than the current market rates on the date on which it took place, shall be liable to the principal for the loss he may have caused him thereby, the statement that he made transactions at the same time for his own account, under similar circumstances, not being admissible as an excuse.

Cannot Sell on Credit.—A factor cannot, without authority from the principal, loan or sell on credit or on time, the principal being permitted in such cases to require cash payment of the agent, leaving him any interest, profit or advantage which may arise from said credit on time.

Rate of Commission.—Should there be no agreement with regard to commission, the latter shall be fixed in accordance with the commercial practices and customs of the market where the commission is fulfilled.

Lien on Goods for Commission.—Merchandise forwarded on consignment shall be understood as specially bound to the payment of the commission fees, advances and expenses the factor may have made on account of its value or proceeds.

FOREIGN CORPORATIONS.

May Engage in Business.—Foreigners and corporations organized abroad may trade in Cuba, subject to the laws of their country, in so far as their capacity to transact business is concerned; and to the provisions of this code in all that refers to the creation of their establishments within Cuban territory, to their commercial operations, and to the jurisdiction of the courts of the country.

Registration.—Foreign partnerships or corporations which desire to establish themselves or create branches in Cuba shall present and have recorded in the register, besides their by-laws and the documents prescribed for Cuban corporations, a certificate issued by the Cuban Consul stating that said companies have been established and authorized according to the laws of the respective countries.

LIMITATION OF ACTIONS.

Six Months.—The real action against the security of agents shall only be brought within six months, counted from the date of the receipt of the public securities, commercial bonds or funds which may have been delivered to them for negotiation. Actions relating to the collection of transportation, freights, expenses inherent thereto, and the contributions of ordinary averages shall prescribe six months after the goods which gave rise thereto were delivered.

One Year.—The following shall prescribe after one year:

(1) Actions arising from services, works, provisions and furnishing of goods or money for the construction, repair, equipment or provisioning of vessels, or to support the crew, to be counted from the delivery of the goods and money, or from the period stipulated for their payment, and from the time services or labor were rendered, if they should not have been engaged for a definite period or voyage. Should this be the case, the time of the prescription shall begin to be counted from the end of the voyage or from the date of the contract referring thereto, and, should there be any interruption therein, from the time of the definite conclusion of the service.

(2) Actions relating to the delivery of the cargo in maritime or land transportation or to the indemnity for delays and damages suffered by the

goods transported, the period of the prescription to be counted from the day of the delivery of the cargo at the place of its destination, or from the day on which it should have been delivered according to the conditions of its transportation.

Actions for damages or defaults cannot be brought if, at the time of the delivery of the respective shipments or within the twenty-four hours following, when damages which do not appear on the exterior of the packages received are in question, the proper protests or reservations should not have been made.

Three Years.—The liability of exchange brokers, commercial brokers, or ship-broking interpreters in the obligations in which they take part by reason of their office shall prescribe after three years.

Actions arising from drafts shall extinguish three years after they have fallen due, should they have been protested or not. A similar rule shall be applied to drafts and promissory notes of commerce, to checks, stubs and other instruments of draft or exchange, and to the dividends, coupons, and the amounts of the amortization of obligations.

Actions arising from loans on bottomry or respondentia or from marine risks shall prescribe after three years from the period of the respective contracts or from the date of the accident which gives rise thereto.

Actions which may be brought by a partner against the copartnership, or vice versa, shall prescribe after three years, counted from the withdrawal of the partner, his exclusion, or the dissolution of the copartnership. It shall be necessary, in order that this period may run, to record in the commercial register the withdrawal of the partner, his exclusion, or the dissolution of the copartnership.

Five Years.—The right to recover the dividends or payments which are declared by reason of profit or capital on the part or share which is due each partner in the association funds shall prescribe after five years, counted from the day fixed to commence their collection.

LIMITED PARTNERSHIP.

Firm Name.—Limited copartnerships must transact business under the name of all the members thereof, of several of them, or of one only, it being necessary to add, in the latter two cases, to the name or names given the words "and company," and in all cases the words "limited copartnership." This general name shall constitute the firm name, in which there may never be included the names of special partners.

Should any special partner include his name, or permit its inclusion, in the firm name, he shall be subject, with regard to persons not members of the copartnership, to the same liabilities as the managing partners, without acquiring any more rights than those corresponding to his character of special partner.

Liability of Special Partners.—All the members of the copartnership, be they or be they not managing partners of the limited copartnership, are jointly and severally liable for the results of the transactions of the latter in the same manner and to the same extent as in general copartnerships. They shall furthermore have the same rights and obligations which are prescribed for partners in general copartnerships. The liability of special partners for the obligations and losses of the copartnership shall be limited to the funds which they contributed, or bound themselves to contribute, to the limited copartnership. Special partners cannot take any part whatsoever in the management of the interests of the copartnership, not even in the capacity of special agents of the managing partners.

LOANS.

Time of Payment.—In loans for an indefinite period, or in which no due time has been fixed, payment cannot be demanded of the debtor until thirty days have elapsed, to be counted from the date of the notarial demand which may have been made.

Interest.—Loans shall not pay any interest unless there is an agreement to that effect in writing. The interest of the loan may be agreed upon without any established rate or limitation whatsoever. Any agreement made in favor of the creditor shall be considered as interest.

Default of Payment.—Debtors who delay the payment of their debts after the same have fallen due must pay, from the day following that on which it became due, the interest agreed upon in such case, or, in the absence of such agreement, the legal interest.

If the loan is in kind, in order to compute the interest, its value shall be determined by the prices of the merchandise loaned in the locality in which the return is to be made, on the day following that on which it falls due, or by the value fixed by experts if the merchandise should no longer exist at the time its appraisement is to be made.

If the loan consists of bonds or securities, the interest, by reason of delay in repayment, shall be that earned by said securities or bonds, or, in the absence thereof, the legal rate of interest, the value of the securities being determined by their price on exchange, if they are subject to quotation, or at their current prices on the day following that on which they fall due.

Compound Interest.—Interest which has fallen due and has not been paid shall not earn interest. The contracting parties may, however, capitalize the net interest which has not been paid, which, as new principal, shall earn interest.

Payments on Account.—Payments on account, when there is no express stipulation with regard to their application, shall first be applied to the payment of interest as it falls due and then to the principal.

Pledged Securities.—After the period for which the loan was contracted has elapsed, the creditor, unless there was an agreement to the contrary, and without necessity of notifying the debtor, shall be authorized to request the alienation of the securities, for which purpose he shall present them, with the instrument constituting the loan, to the board of directors, which, after finding their numeration correct, shall convey them to the amount necessary through a licensed broker, on the same day, if it be possible, and, otherwise, on the next. A lender can only make use of the said right during the hours of the exchange of the day following that on which the debt fell due.

Securities which are quoted on exchange, payable to bearer, pledged in the manner fixed in the foregoing paragraph, shall not be subject to return until the lender has been reimbursed, without prejudice to the rights and actions of the dispossessed owner against the persons liable according to the laws for the acts by virtue of which he has been deprived of the possession and ownership of the securities given as a guaranty.

MARRIED WOMEN.

May Engage in Business.—A married woman, over twenty-one years of age, may trade with the authority of her husband, contained in a public instrument recorded in the commercial registry. A married woman shall also be considered authorized to trade who does so with the knowledge of her husband.

Revocation of Authority.—The revocation of the permission granted the wife to trade must be entered in the register.

Property Liable for Her Transactions.—If the woman is authorized to do business, her dowry and personal property, in addition to the dowry, and all the property and rights of the conjugal partnership, shall be liable for the results of her commercial transactions, the wife being permitted to alienate and mortgage her personal private property, as well as that owned in common.

PARTNERSHIP.

Name.—The general copartnership must transact business under the name of all its members, of several of them, or of one only, it being necessary to add in the latter two cases to the name or names given the words "and company." This general name shall constitute the firm name or signature, in which there may never be included the name of a person who is not at the time a partner in the association. Those who, not being members of the partnership, include their names in the firm denomination, shall be subject to joint liability, without prejudice to the penal liability which may be proper.

Liability of Partners.—All the members of the general copartnership, be they or be they not managing partners of the same, are personally and jointly liable with all their property for the results of the transactions made in the name and for the account of the partnership, under the signature of the latter, and by a person authorized to make use thereof.

Who May Bind the Partnership.—The partners not duly authorized to make use of the firm signature shall not make the company liable through their acts and contracts, even though they execute them in the name of the latter and under its signature. The civil or criminal liability for these acts shall be incurred exclusively by the authors thereof.

Liability of Retiring Partners.—The liability of the partner excluded, as well as that of the copartnership, for all acts and obligations contracted in the name and for the account of the latter, with regard to third persons, shall continue until the record of the partial rescission of the articles of copartnership has been made in the commercial register.

Dissolution.—General and limited copartnerships shall be dissolved for the following reasons:

(1) The death of one of the general partners, if the articles of copartnership do not contain an express agreement that the heirs of the deceased part-

ner are to continue in the copartnership, or an agreement to the effect that said copartnership will continue between the surviving partners.

(2) The insanity of a managing partner, or any other cause which renders him incapable of administering his property.

(3) The failure of any of the general partners.

A partnership shall not be considered as extended by the implied or presumed will of the members after the period for which it was constituted has elapsed; and if the members desire to continue in association they shall draw up new articles of copartnership.

SALES.

Expense of Delivery.—The expense of the delivery of merchandise in commercial sales shall be defrayed by the vendor until said merchandise is placed at the disposal of the purchaser, weighed or measured, unless there is an agreement to the contrary. The expenses arising from the receipt and removal of the merchandise from the place of delivery shall be defrayed by the purchaser.

Delivery on Time.—If the vendor does not deliver the goods sold at the time stipulated, the purchaser may request the fulfillment or the rescission of the contract, with damages in either case for the loss he may have suffered by reason of the delay.

Delivery of a Part.—In contracts in which the delivery of a certain amount of merchandise is stipulated within a certain time, the purchaser shall not be obliged to receive part of said amount even on the promise of delivering the balance; but if he accepts the partial delivery the sale shall be consummated with regard to the goods received, reserving the right of the purchaser to demand for the rest the fulfillment of the contract or its rescission, in accordance with the foregoing article.

Purchase Money Lien.—During the time the articles sold are in the possession of the vendor, even though they be in the capacity of deposit, the latter shall have preference to the same over any other creditor to obtain the payment of the price with the interest arising from the delay.

Delayed Payments.—Any delay in the payment for the article purchased shall obligate the purchaser to pay the legal rate of interest on the amount he owes the vendor.

By Sample.—If the sale takes place by sample or by a fixed quality, in case the purchaser refuses to accept the goods, experts shall be appointed by both parties, who shall decide whether their reception is proper or not. If the experts should declare that the articles are to be received, the sale shall be considered as consummated, and in a contrary case the contract shall be rescinded, without prejudice to the indemnification to which the purchaser may be entitled.

Right of Examination.—In the purchase of goods which are not seen or cannot be classified by a fixed quality, well known in commerce, it shall be understood that the purchaser reserves the privilege of examining them and unrestrictedly rescinding the contract if the goods do not suit him. The purchaser shall also be entitled to rescind said contract if he reserved the right, by an express agreement, to examine the goods contracted for.

Refusal of Purchaser to Accept Goods.— If the purchaser refuses, without just cause, to receive the goods bought, the vendor may demand the fulfillment or rescission of the contract, depositing the merchandise in court in the first case. The same judicial deposit may be made by the vendor whenever the purchaser delays in taking charge of the merchandise. The expenses arising from the deposit shall be defrayed by the person who caused said deposit to be made.

Purchaser's Risk.—The damages and impairment suffered by merchandise after the contract has been consummated and the vendor has the goods at the disposal of the purchaser in the place and at the time agreed upon, shall be suffered by the purchaser, except in cases of carelessness or negligence on the part of the vendor.

When Vendor is Liable for Damage.—The damages and impairment suffered by merchandise, even though it be by reason of an accident, shall be for the account of the vendor in the following cases:

(1) If the sale took place by number, weight or measure, or if the article sold is not fixed and determined, with marks and signs which identify it.

(2) If, by reason of an express agreement or the usages of commerce, in view of the nature of the article sold, the purchaser has the privilege of previously examining and investigating it.

(3) If the contract contains a clause to the effect that the delivery is not to be made until the article sold has acquired the conditions stipulated.

Purchaser's Right of Action Against Vendor.—A purchaser who, at the time of receiving the merchandise, fully examines the same shall not have a right of action against the vendor, alleging a defect in the quantity or quality of the merchandise.

A purchaser shall have a right of action against a vendor for defects in the quantity or quality of merchandise received in bales or packages, provided he brings his action within the four days following its receipt, and that the average is not due to accident, to the nature of the merchandise, or to fraud.

In such cases the purchaser may choose between the rescission of the contract or its fulfillment in accordance with the terms of the agreement, but always with the payment of the damages he may have suffered by reason of the defects or faults.

The vendor may avoid this claim by demanding, when making the delivery, that the merchandise be examined fully by the purchaser with regards to the quantity and quality thereof.

Limitation of Claim for Defects.—A purchaser who has not made any claim based on the inherent defects in the article sold within the thirty days following its delivery shall lose all rights of action against the vendor for such defects.

Loss of Goods.—The loss or impairment of the goods before their delivery, on account of unforeseen accidents or without the fault of the vendor, shall entitle the purchaser to rescind the contract, unless the vendor has constituted himself the bailee of the merchandise, in which case his liability shall be limited to that arising by reason of the deposit.

WAREHOUSE RECEIPTS.

Negotiable.—The receipts issued by general warehouse associations for the produce and merchandise they accept to care for shall be negotiable, shall be transferred by indorsement, assignment, or in any other manner transferring ownership, according as to whether they are issued to order or to bearer, and shall have the force and value of commercial bills of lading. These receipts must necessarily state the class of goods, with the number or amount each one represents.

Holder.—The owner of the receipts is vested with the full ownership of the commodities deposited in the warehouses of the association, and shall be exempted from all liability from claims brought against the receiver, the indorsers, or prior owners, except if said claims arise from the transportation, storage, and preservation of the merchandise.

Actions.—If a creditor who has legal possession of a receipt as security should not be paid on the day his claim falls due, he may bring an action against the association to gain possession of the goods on deposit sufficient to cover his credit, and shall have preference over other debts of the depositor, with the exception of those mentioned in the foregoing article.

The sales referred to in the preceding paragraph shall be made in the warehouse of the association, without the necessity of a judicial decree, at a public auction previously announced, and through a licensed broker, where there are any, and otherwise through a notary.

TRADE-MARK LAWS.

The trade-mark law in force is the Spanish law of August 21, 1884, modified by the law of January 17, 1901. The law provides expressly for the registration of foreign trade-marks, provided a treaty on the subject exists between the country in which their owners are located and Spain; or, in case no such treaty exists, foreign marks may be registered on condition of reciprocity. Registration is necessary to secure the right of the mark. In fact, the law forbids the use of an unregistered mark, and the user of a mark who fails to register it within ninety days is liable to a fine. The first applicant for registration becomes the owner of the mark.

The definition of a registrable trade-mark is broad enough to include any distinguishing mark. The following marks are not registrable: (1) National arms or insignia or decorations, except by express authority; (2) arms, insignia, blazons, or devices of any foreign state except by consent of such state; (3) marks commonly employed to designate a class of goods; (4) pictures contrary to good morals, and caricatures tending to ridicule ideas, persons or objects worthy of respect; (5) marks previously registered; (6) marks so closely resembling previously registered marks as to cause confusion or to deceive; (7) marks which relate to any form of religion, when it is apparent that the mark, whether intentionally or not, tends to disparage or ridicule; (8) portraits of living persons without their consent, or portraits of deceased persons when any of their relatives within the fourth degree object. Only one mark may be registered for the same industry or class of products, and the registrant is liable to fine if he uses any mark other than the registered mark. Transfers of trade-marks must be registered. The term of registration is not stated. The fee for registration is $12.50. Infringers of registered trade-marks are liable to fine and imprisonment.

CHAPTER X.

THE ISLE OF PINES.

THE Isle of Pines, about which there is special interest, owing to the fact that the Platt Amendment provides that it shall be omitted from the proposed constitutional boundaries of Cuba, the title thereto being left to future adjustment by treaty, is also called Reina Amalia and lies in the Caribbean Sea, in a deep bight off the south coast of the western part of Cuba.

The island, which measures thirty-four miles from north to south, and forty-three miles from east to west, contains, including the "cienaga," or swamp, 631,040 acres, or ninety-nine square miles less than the State of Rhode Island. The island has a geological relation to the general chain of insular mainlands of the Antilles, and is unlike the numerous low coral and sand formations, known as keys and mangrove swamps, scattered in such profusion off the coast. In general, the surface is a plateau of from fifty to one hundred feet above the sea level, broken by ridges of hills or cliffs that project abruptly above the general surface.

The two mountain ridges at the northern end reach an elevation of about 1,500 feet, and are composed of limestone and marble. The other ridges in the center are much lower, less precipitous, and are formed of gray sandstone, red rock, and gravel, containing iron. The most remarkable summits are the Sierra de la Canada, 1,600 feet high, with precipices measuring 150 feet; Daguila, 1,500 feet high, from the summit of which the entire island may be seen; Sierra de Caballos, 1,074 feet high, and Mount Casas, which is of moderate height.

The southern part, comprising about one-third of the entire area, is an impassable "cienaga," or salt bayou and lagoon, interspersed with islets and ledges of coral rock, locally known as "dog-tooth" formations, and occupied by fishermen. There is a small open lake at the south of the causeway which connects with higher ground. The whole island, with the exception of the rocky southern coast, is surrounded by mangrove swamps, with here and there a stretch of sandy beach.

The mineral springs, for which the island has a world-wide reputation, judged from official and individual certification as to curative properties, are remarkable in pulmonary, rheumatic and throat affections. A chemical analysis shows the waters to be impregnated with oxygen and carbonic acid gas, chloride of sodium, sulphate of lime, magnesia, chloride of calcium, nitrate of lime and silex. The temperature of the water is 82 degrees F. The regimen of treatment is two baths, of a quarter of an hour each and four glasses taken inwardly per day.

The baths are erected over the springs. The testimonials of the beneficial effects of bathing and drinking are numerous, among others being a case of bronchial trouble requiring caustic treatment of the throat, which was cured in ten days, and without a recurrence of the complaint. It is claimed that the waters rival Saratoga, in the United States.

The climate is described as delicious, the air pure and balmy, and notwithstanding the fact that the island is sea girt, is considered dry. The winds, coming from the sea and passing over the pine forests, are gentle and invigorating. The year is divided into two seasons. During the wet, or summer, season the rains begin early in June and last until October, seldom more than two hours in the afternoon, and are accompanied by thunder and lightning. The greatest rainfall is in May, June and July, although there is no month entirely free from rain. During this wet season about two-thirds of the precipitation of the year falls. The day is usually clear until 10 a. m., after which it is showery until night, which is clear. The hottest hours are from 10 to 12 a. m. About 8:30 p. m. the breeze blowing in from the sea moderates the temperature, and at night heavy dews contribute to the luxuriance of vegetation.

The dry, or winter, season extends from October to June, with occasional visitations, from November to February, of northers, lasting about forty-eight hours, when the temperature falls to 50, but these are not as uncomfortable as the March winds of the United States. This dry season is not entirely without precipitation, the rainy days numbering about one-third as many as those of the wet season. The annual rainfall ranges from fifty to fifty-two inches, being less than that of the Gulf Coast of the States.

Of the land denominated rich, a very small percentage is actually under cultivation, but the nature of the growth upon it shows the value of the soil. Of the entire surface of the island but one per cent., or 3,900 acres, is now under cultivation. As an example of the wonderful variety of products, a farm of less than thirty-three acres under actual cultivation produces coffee, sugar, chocolate, cocoanuts, plantains, bananas, sweet potatoes, cassava, rice, beans, lettuce, tobacco, honey, fowls, pigs and cattle, as well as a few pineapples for home consumption. The rich, arable land of the island is not found in large tracts, but is scattered in patches among the hills, suitable for tobacco rather than sugar plantations.

The demand for supplies in the island is small, and the freight rates to the mainland are high, hence the only agricultural product that finds a ready market, and commands cash, is tobacco. Of this staple the island exported in 1899 about 5,000 bales (of 100 pounds each). In 1900 the product was less, as the workers who had come from Cuba to escape the war returned to their old homes, where the reputation of the leaf, if not its actual superiority, gives the laborer who cultivates on shares a larger return for his work. Tobacco from the Isle of Pines sells in Havana at the highest market rates.

In addition to tobacco, the chief crop of the island, the following vegetable products are cultivated: Boniato, or sweet potato, which has a particularly fine flavor, and with reduced rates to Cuba should become a marketable product; chocolate, raised only experimentally but of fine quality, and cocoanuts, which yield abundantly though but few trees have been planted. Cocoanuts could easily become an article of export. Coffee has thus far been raised only as an experiment, but the quality seems to be fair, and good results may be expected therefrom. Rice grows well without irrigation, while sugar cane at present is raised only for home consumption, the juice being extracted by a rude wooden mill and boiled down in a large open kettle, making a coarse, dark sugar, unfit for export. About 112 farms on the island are devoted chiefly to tobacco.

The only mineral product of importance is marble, which is found in the two mountains east and west of Nueva Gerona, on the north coast. It was quarried extensively about thirty years ago, the ruins of a steam plant for sawing and polishing the slabs being still in evidence as showing that money had at one time been invested in the enterprise. It is said that, for reasons of its own, the government looked with disfavor on the enterprise and, to discourage it, levied a duty upon the sand used in sawing, which was hauled from the shore a mile from the quarry. This imposition killed the industry. About twelve years ago a few cargoes of marble blocks were shipped to Havana, where they were sawed and polished. Since that time nothing has been done. The marble is of good quality, ranging from good white statuary, through various shades of blue-veined stone, to marble of a dark gray, though specimens with pink coloring are also found. The stone is free from cracks and will furnish slabs of any dimensions. The deposits range from five to twenty-five feet in thickness. The old workings have done nothing more than strip the surface of a cliff of weather-worn rock, and the amount of material in sight is unlimited. The rock crystals scattered over the hills are much prized by casual visitors to the island.

At Neuva Gerona are the ruins of an extensive brick-yard, whence flooring and roofing tile were formerly shipped to Havana, but nothing is now done in this direction.

The flora of the island includes many of the varieties found in Florida, with the large hard-wood trees of Central America and Mexico, and, singularly, the pine, a species from the temperate zone, which gro over the greater part of the island. There ar extensive groves of the royal palm, and twenty-six other varieties of the same numerous family, mahogany, lignum-vitae, coco-wood, from which reed instruments are made, the cedar, used in the manufacture of cigar-boxes, and certain dye-woods. In the swamps on the southern side of the island, accessible only by sea, are found mahogany and most of the other valuable woods of the island. There are two small saw-mills on the island, only one of which is in operation. The pine is not large and is valuable only for railway ties, telegraph-poles, and poles on which to hang tobacco during the process of curing.

Nueva Gerona, the capital, is situated on the left bank of the Sierra de las Casas River, two miles above its mouth on the north coast. It is elevated about thirty feet above the sea, well drained, exposed to the constant breezes from the sea and is free from malaria. There is a hotel, an ice plant, and a wharf where the steamer from Batabano lands once a week. The population does not exceed 1,000 souls, and the population of the entire island does not exceed 3,200, according to the census taken by the American government in 1899.

Considered from an economic point of view, the Isle of Pines is not to be compared with Cuba. Its soil is not adapted to sugar-raising, though, as stated, there are certain small patches well adapted to tobacco culture. Much of the island would doubtless produce fruit, but grazing is the most promising business at present in view and it might become in time an important source of supply for cattle and sheep for the West Indian markets. It will doubtless become an important health resort and all conditions of climate, vegetation and scenery combine to render it attractive both to invalids and others who wish to escape the severe Northern winters. Unfortunately, the island is without deep harbors, being surrounded by broad reaches of very shallow sea, which largely neutralizes its value from a military standpoint.

CHAPTER XI.

AMERICAN ENTERPRISE IN CUBA.

THE amount of American capital already invested in Cuba is very large. Previous to the late war this capital was absorbed almost entirely by the vast sugar plantations, but the trend of investment to-day is toward more diversified interests, such as copper mines, tobacco, fruit and vegetables and the cattle industry.

Cuba's geographical position, practically at the door of the United States, and her undoubted agricultural and mineral wealth offers a field for American enterprise, which is bound to attract not only an enormous amount of capital, but that which is equally essential, Yankee energy and brains.

The value of the island as a safe and profitable sphere for the investment of money and labor is proved by the testimony of eminent observers, who have given the subject personal attention. In the opinion of Robert T. Hill, of the United States Geological Survey, the industrial possibilities of Cuba are undoubted. He says, in part:

"In the mountainous eastern end of Cuba, Puerto Principe and Santiago will be the most profitable field for fruit culture. This highly favored region is the only one, outside of the Mediterranean shore between Marseilles and Genoa, that will produce lemons equal to those grown in Sicily. Properly conducted, lemon culture, the fruit of which commences ripening in May, would become a source of great profit to the United States. Lemons and limes are more easily grown than oranges, and as their area of production is limited, there could be no surer agricultural road to fortune. The eastern end of Cuba is one of the finest regions for coffee in the world. All in all, the climate of Cuba is more salubrious than has been painted. The winter months are delightful; in fact, ideal, while the summer months are more endurable than most parts of our own country. Puerto Principe is the least settled of any of the provinces."

American capital is already represented in Puerto Principe province. In the vicinity of Ciego de Avila, and along the north coast near Nuevitas, many thousand acres of land have been purchased and colonization by Americans has been inaugurated. Development companies, formed in New York by prominent and responsible men, have cleared off the lands and planted the nucleus of towns destined to become centres of commerce.

These enterprises are managed systematically, and every effort is made to further the interests of the colonists. Saw-mills and commercial depots have been erected, and sugar-mills, tobacco factories, fruit canning factories and other equally important industries can be found in the American colonies.

One of the companies formed to exploit the province of Puerto Principe has acquired valuable lands and mining claims along the route of the Jucaro and San Fernando Railroad, one of the lines leased by the new Cuba Company. The lands are in the vicinity of Ciego de Avila and Moron, and include tracts exceedingly valuable for sugar, fruits, coffee and tobacco planting. The mineral deposits are equally important, assays showing a high percentage of copper and iron.

Another New York company located its colony in the municipal district of Viaro, about fifty miles east of Nuevitas. This corporation began the work of colonization early in 1900, first establishing a tent settlement in the woods. To-day the colony is well established with a growing population, and an enterprising town containing a public school, substantial frame business and dwelling houses and several church societies and social organizations. The colony has nearly 40,000 acres, sub-divided into small tracts of from five to twenty acres each, devoted to the raising of oranges, bananas and pineapples.

Farther east, along the north shore, a great amount of American capital has been invested in banana plantations. On Nipe Bay and Sagua de Tanamo Bay, several American corporations have cleared and planted many thousand acres of this profitable fruit.

The shipment of bananas to the markets of the United States has commenced, and steamers are now being laid down in American shipyards for the exclusive use of these companies..

An important feature of the various American agricultural enterprises in Cuba is the colonization of lands by the sturdy, energetic farmers of the United States. Without the aid of this very desirable class of emigrants it will be practically impossible to achieve success, and every inducement is being offered to American agriculturists eager to try a hazard of new fortunes in Cuba.

In and about Havana and the other large cities of the island, American enterprise is making itself known. The policy of the new government is to strongly encourage the influx of American capital and brains, and the visitor from the north, be he capitalist or laborer, professional man or sight-seer, is assured of a cordial welcome.

Many opportunities await the American. Electric tram lines must be built in the various cities, machine shops, manufactories of all kinds, hotels, shops and business enterprises of every class are needed, and it is the Yankee with capital and skill who will reap the harvest.

Peculiarly close and sympathetic ties exist between Cuba and the United States. The lesser country is attached to the greater by bonds of gratitude and by the knowledge of her dependence upon the American

Republic for her political entity. In no foreign country, probably, will American capital and enterprise be welcomed so warmly as in Cuba. The Island Republic realizes that her national prosperity must depend, in large measure, upon the extent to which these two factors of progressiveness can be interested, and is disposed to offer liberal inducements. On the other hand, the field itself is tempting. The land is one of marvelous natural resources, as yet practically undeveloped. It lies at the very threshold of the United States.

OPPORTUNITIES IN PORTO RICO

OPPORTUNITIES IN PORTO RICO

BY HON. CHARLES H. ALLEN

First Civil Governor of Porto Rico.

CHAPTER I

GENERAL CHARACTERISTICS

PORTO RICO, the loveliest island washed by ocean waves, lies between the Atlantic and the Caribbean, 1380 miles from New York City. It is geographically located between the parallels 17 degrees 54 minutes and 18 degrees 30 minutes north latitude, and the meridians 65 degrees 13 minutes and 67 degrees 15 minutes west longitude. It is in round numbers about 100 miles long from east to west and about thirty-six miles broad from north to south, having an area of 3668 square miles, including its adjacent and dependent islands, Vieques, Culebra, and Mona, and a score or two of smaller keys.

An idea of its size can perhaps be gained by some familiar comparisons. Porto Rico is approximately three times as large as Rhode Island, one and eight-tenths larger than Delaware, three-fourths the size of Connecticut, and nearly one seventy-eighth the size of Texas, being almost exactly equal in area to four counties of the regular dimensions in that gigantic State. It is the smallest of the greater Antilles and lies farthest to the east and south. It has a sea line of about 360 miles. Its shape is nearly a perfect parallelogram, having the southeast corner gently rounded off.

Its coast has few indentations and is generally low, with only here or there a harbor or a headland. A range of lofty hills or miniature mountains runs through its entire length, trending toward the south coast, from Luquillo in the northeast to Cape San Francisco in the extreme west. The highest peak in the island is El Yunque (The Anvil), which reaches an altitude of 3600 feet above sea level. From this central chain branch out ranges of hills interspersed with valleys, from which more than a thousand silver streams and rivulets rush headlong to the sea.

The lower portions of the country are covered with fields and pastures, and the higher regions in places abound with woodlands, which increase in density with the elevation. Clothed in perennial verdure, the surface of hill and dale presents to the eye an ever-delightful picture of tropical beauty. The lights and shadows of the landscape, reaching from the hilltops to the sea, never weary the eye of the tourist or the native. Nature has here "planted a garden," and man has only "to dress it and to keep it" to make it blossom like another Paradise.

CLIMATE

The climate is perpetual spring or early summer. Lying well within the torrid zone, it is needless to say that ice and snow are unknown in Porto Rico. The temperature is very mild and equable, Fahrenheit's thermometer generally standing at about 80 degrees, the mean monthly temperature being 79 degrees at San Juan for twenty years. It rarely rises above the latter point and never, or hardly ever, goes beyond 98 degrees or falls below 58 degrees, making an extreme range of 40 degrees. This is an extremely small variation when one considers that the temperature in Washington, D. C., ranges through a scale of 118 degrees, and at Pembina, North Dakota, covers a scope of 180 degrees. The temperature generally rises in the daytime and falls at night through a range of only 10 or 15 degrees. The mean monthly temperature scarcely varies throughout the year. Although the atmosphere is often damp, it is never sultry, being always freshened by the ocean breezes, day and night, even in the warmest weather. The hottest months are from June to September, and the coolest from December to February, resembling in this respect the Gulf States of the continent.

The annual rainfall varies greatly in different parts of the island, being generally smallest in the west and south and greatest in the north and east. It ranges from twenty inches on the west coast to the enormous figure of 120 inches in the forests of Mount el Yunque. The annual precipitation at San Juan, running through twelve years, averages 59.5 inches. The greatest monthly mean is given at 7.6 inches and the lowest at 1.8 inches. No statistics in regard to the rainfall will apply to the whole island, the variations being nearly or quite as great as between the lake and gulf regions in the United States. But no matter how violent the downpours they never last very long, and run off rapidly. The skies, though weeping copiously at noon, long before sunset, like children's faces, are smiling brightly again, as if there had never been a cloud above the horizon. The heavens are clothed once more in purple, gold, and violet, and the sun pours his slanting beams in radiant beauty on land and sea.

It is to the winds and the mountains that this island owes its great variety and range of rainfall. The trade winds, blowing from the north and east, generally if not constantly, make their influence felt in tempering the heat and bringing the rain-bearing clouds from the waters of the broad Atlantic; but they rarely touch this lovely island too roughly. It is true that hurricanes sometimes have visited it, bringing death and devastation in their tracks, but these occurrences happen on an average once in a lifetime. Since the discovery by Columbus, over 400 years ago, seven violent hurricanes are recorded.

They probably visit portions of the continent almost as often, though the small area of this and other islands makes their comparative effect the more disastrous. During the last four centuries at least, earthquakes have been practically unknown.

SOIL

The soil of Porto Rico is remarkably productive, and although portions of it were under tillage long before the Pilgrims waded ashore at Plymouth, yet it is not exhausted.

Parts of it have been changed from arable to pasture land, but this is largely from extraneous causes. Broad plains of fertile land like those in Iowa or Illinois cannot reasonably be looked for in an island which has an area only equal to four ordinary counties in one of those States. But in this little island are almost countless valleys, small in area, but as rich as the delta of the Mississippi or the valleys of the Nile. The hills are capable of cultivation to their very summits, and coffee, one of the principal crops of the country, thrives better on the slopes under the protecting shades of the open forests than in the alluvial lands of the valleys. The mountains, to their very crests, are covered with a rich detritus, forming a soil well adapted to the growth of tobacco, corn, potatoes, and all kinds of tropical fruits. The alluvial plains along the margins of the larger rivers and on the seacoast furnish the best of all soils for the growth of sugar cane, and it is raised there in abundance. With such a geographical situation, and such a soil and climate, surely this island has little to be vainly looked for by the continental resident seeking a winter residence or an ideal spot for the successful pursuit of horticulture or agriculture in its most pleasing aspects.

SANITATION

The sanitary condition of the island and the public health has received especial attention from the civil government ever since it went into operation. On the 30th of April, 1900, by General Orders No. 102, the Military Commander, at the request of the civil Governor-elect, constituted the Superior Board of Health, which forms a bureau in the Department of the Interior, and is composed of the Commissioner of the Interior, the Commissioner of Education, two physicians, and a pharmacist; one of the medical men is the secretary and treasurer of the board and also its disbursing officer. The latter is the only officer of the board receiving a salary for his services. This board has been unremitting in its efforts, and ever-wakeful in its vigilance as the guardian of the public health.

The prevailing diseases in Porto Rico are anæmia, tuberculosis, dysentery, and malaria. The first of these is undoubtedly caused by the untidy habits of the poorer classes, the impure water, and the inferior and insufficient food on which many of them subsist, especially since the hurricane of August, 1899. Tuberculosis, which exists to a greater extent in the more populous towns, results from overcrowding in the damp and unventilated habitations where these poor people sleep. They do not seem disposed to be at all friendly with fresh air. Dysentery and malaria spring from the usual causes underlying those diseases. The former is usually severe in its ravages, but the latter is very rarely of a violent type. During the past year only one case of yellow fever has been reported, and that was at once investigated by the surgeon of the Marine Hospital Service and the secretary of the Superior Board of Health, who found that there had been an erroneous diagnosis. It is not indigenous in this island.

Quarantine is maintained against cerebro-spinal fever, plague, scarlet fever, cholera, diphtheria, glanders, leprosy, smallpox, typhus, and yellow fever. The regulations are enforced as to exterior travel by the officers of the United States Marine Hospital Service, and as to interior points by the Superior Board of Health. These two corps, though entirely independent of each other, deriving their authority from different sources, have been working so far in entire harmony. The line separating their duties is by no means clearly drawn, and legislation on these matters appears to be desirable for fear that clashes of authority may arise. As yet there has been no occasion for any internal quarantine. An outbreak of smallpox at Ponce in February and March occasioned some alarm at first, but prompt measures were taken to suppress it, and on investigation it proved to be of a very mild type, scarcely more than varioloid. It readily yielded to treatment and was easily controlled. Only one death resulted from the entire number stricken.

WATER SUPPLY

The water supply is, of course, of the very first importance in connection with the health of any people. And although there is probably no better watered island on the planet than Porto Rico, yet the twelve hundred streams that find their way from the crest of the central cordillera to the surrounding sea are not utilized to give pure, fresh water to the inhabitants.

The sources of the water supply, here as elsewhere, are fourfold: (1) Cisterns, (2) springs and wells, (3) creeks and rivers, (4) aqueducts. There are estimated to be in the island 158,305 dwelling houses. Of these, 55,093 draw their water from cisterns which have caught the rain water as it fell from the clouds; 7896 houses are supplied from springs or wells on the premises; 85,348 from natural streams, brooks or rivers, and 9393 from artificial aqueducts. The last, of course, are situated in the larger towns only. An easy calculation will show the percentage of the several sources to be as follows: Of the first class, 35 percent; of the second, 5 percent; of the third, 54 percent, and of the fourth, 6 percent.

It readily appears that most of the country people drink river water from the streams flowing in their natural channels. "Many of these streams are used," says the Secretary of the Board of Health, "not only as public laundries, but as common sewers for the surrounding country." Where the water is from springs in the rural districts, it is probably the purest of any kind used. The wells in the cities and towns are generally in the courtyards and far too often in dangerous proximity to the cesspools. Cisterns are polluted by the filth accumulated on the flat roofs of houses and are subjected to the same surroundings as the wells mentioned.

There are no water works or aqueducts except in the cities of San Juan, Ponce, and Mayaguez, and these are very incomplete and in bad order, although the recent success of the larger municipalities in negotiating loans for municipal improvements will have a tendency to correct many evils. The health of the island can never attain its proper standing in the sanitary scale until the water supply receives the careful attention of the authorities. Considerable sums of money will have to be expended in reservoirs, canals, filter beds, mains, and service pipe and all their concomitants before the situation can be considered satisfactory.

The disposal of garbage seems never to have received serious thought from any of the municipal authorities. There is no regular system in use. In some places it is burned when it accumulates, but this is by no means usual. Not more than one-eighth of the dwellings are provided with any municipal means of disposing of garbage. In more than 70 percent this important matter is left entirely in the hands of private householders and, of course, receives very scant attention.

There is not a complete sewer system in any city, town or hamlet in the whole island. A few isolated sewer pipes connect an occasional dwelling with the sea or some other outlet, but natural drainage is the only resource at present available, and sewerage must await the arrival of more funds in the treasury.

Notwithstanding all these drawbacks, Porto Rico has been said by competent authority to enjoy more than ordinary exemption from epidemics, and that "the mortality according to the published tables does not exceed that which prevails in some of the more healthful countries of Europe."

Much has been said by travelers in regard to the peculiar customs in Spanish-American countries touching the burial of the dead. Doubtless, in the days of Spanish rule the conditions in Porto Rico were subject to the usual criticism. On coming to Porto Rico the American authorities found the cemeteries crowded to overflowing, and interments were conducted in such a manner as to be a grave menace to the health of the living. Military orders were issued that new cemeteries should be opened, but poverty prevented their immediate enforcement. During the past year a marked improvement in these matters is discernible. In many sections branch cemeteries have been laid out in the remote districts, to the great convenience of the poorer classes. Acts were passed by the legislative assembly making the municipal burial grounds free to all and authorizing the local authorities to condemn lands for the use of cemeteries when necessary. Charnel houses and bone heaps no longer display their piles of human bones, and grinning skulls have ceased to salute the visitors to the city of the dead. The time may yet come when some insular necropolis may rival Greenwood or Arlington in beauty.

Porto Rico is naturally, from its topography, one of the healthiest countries to be found anywhere, or at least in the torrid zone. Its whole contour is so interspersed with hill and dale, mountain stream, and playa, that the copious rains which freshen the atmosphere every month in the year at the same time cleanse the surface of the earth from all its impurities. In this particular, as in many others, bountiful Nature has shown herself an indulgent mother to these children of the Sun. And in these matters, too, they have learned to rely too much on the kindness thus extended, and have suffered their energies to become latent and their natural abilities to slumber. But when they once awaken to the importance of preserving health and realize the methods dictated by modern science, they will quickly put them in practice, and the sun, in its daily circuit through these tropic skies, will smile on no more healthful spot than this little sea-girt isle.

CHAPTER II

AGRICULTURAL POSSIBILITIES

THE INDUSTRIAL possibilities of the island of Porto Rico, considering the fertility of its soil, the mildness of its climate, the abundance of rain, its insular position, and its teeming population can scarcely be viewed with anticipations too optimistic. While at present, as has been the case since Columbus first set foot upon its shores, its chief reliance is agriculture and stock-raising, there is no reason why manufactures should not flourish here, and an ocean commerce spring up not only with the North American continent, but with all the world. It is perfectly feasible that, while developing the immense agricultural resources of the island, at every seaport factories might be established and nothing leave the shores but the finished products. Porto Rico can sell to the world not only coffee ready for the consumer's use, but refined sugar and molasses, rum, cigars equal to those purchased in Havana, cotton goods of all descriptions, fine leather, shoes and harness, chocolate and all its products, canned fruits equal or superior to the best preserved in California, and many other necessaries and luxuries which will bring in return sufficient not only to support the million of people now there, but five times as many.

It is with the present more than the future, however, that we have to deal in this connection. The industrial possibilities of Porto Rico are at this time largely agricultural. Of the superficial area—3668 square miles, equivalent to 2,347,520 acres—nearly 20 percent is in cultivation. To be more explicit, the area is divided as follows:

	Acres.
Cultivated lands	464,361
Wood lands	165,671
Pasture lands	1,203,206
Unused lands	138,348
Towns, roads, streams, and swamps	375,934
Total	2,347,520

Again subdividing the lands according to crops:

	Acres.
Coffee	166,164
Sugar cane	82,678
Tobacco	13,704
Miscellaneous crops	201,815
Total	464,361

There are thus 464,361 acres producing crops. After setting aside the 20 percent of the area which is cultivated land, there remains 51 percent in pasture land and 13 percent in unclassified uses and woodlands, leaving a balance of 16 percent in towns, roads, streams and swamps. A great portion of this is in forests, which cover the hilltops and dot the slopes in every district. One is never out of sight of leafy groves and wooded mountains.

COFFEE

The three principal crops are coffee, sugar and tobacco; cattle and other live stock are raised successfully also and in considerable abundance. The coffee plantations cover with their green foliage, their jasmine-like flowers, and cherry-like berries 7 percent of the whole area of the island and 36 percent of its cultivated lands. It is perfectly obvious, however, that four times as much land as at present under coffee could be used in growing this crop were the market to be found for its exportation.

There are now 21,693 plantations, averaging 27.5 acres each. These produced in the year 1897 about 29,580 tons of excellent coffee, worth $15,250,000. Of this crop the amount of 23,505 tons was exported, principally to Europe, and sold for $12,230,000. The hurricane of August, 1899, destroyed many of the coffee trees, and of course diminished the crop; and as it required time after the injuries sustained for the coffee tree to renew its bearing, only during the present year can this industry be said to have been restored to its former condition. During the twenty months of American military occupation, however, there were exported from Porto Rico 28,687 tons of coffee, worth $7,-

420,382; and during the first ten months of civil administration the exports reached 5393 tons, worth $1,397,442.

SUGAR

Although the sugar-planting is confined to the seacoast plains or playas, and to the alluvial bottoms along the margins of the larger streams, there is no doubt that a large acreage of such lands, which are now devoted to pasturage, under proper conditions, could be devoted to the culture of sugar cane. The 2336 sugar plantations now existing on the island cover an average area of about 35 acres each. This amounts to only 3.5 percent of the insular area, and to only a little under 18 percent of the lands under tillage.

In the year 1897 there were produced about 66,154 tons of sugar, worth $4,467,000; and of this amount 57,649 tons were exported and sold for $4,008,000. The exports of sugar during the twenty months of American military government amounted to 69,450 tons, valued at $3,949,609, and during the first ten months of the civil administration there were exported 36,636 tons, valued at $2,753,553.

Many valuable sugar estates have been converted into pasture lands, on account of the changes in the process of manufacture from the Jamaica train to the grand central, and the want of necessary capital incident thereto. It is a matter of congratulation, however, that the recent opening of the markets of the United States to the people of Porto Rico, through the proclamation of President McKinley, made on July 25, 1901, has stimulated this industry in particular, and already several "centrals" are in process of erection, involving an expenditure of several millions of American capital, already assured to the island.

Reliable statistics show that the yield of sugar per acre in Porto Rico is greater than in any other cane-growing country in the world, except Hawaii and Java, and it approximates these. However, the cost of production is $10 per ton cheaper than in Java, $11 cheaper than in Hawaii, $12 cheaper than in Cuba, $17 cheaper than in Egypt, $19 cheaper than in the British West Indies, and $47 cheaper than in Louisiana or Texas. With these advantages of greater production at less cost, the sugar planters of Porto Rico ought to be able to compete with the rest of the world in any open market.

TOBACCO

Although the 13,704 acres covered by the tobacco plantations in the island may seem insignificant, yet when we see that the crop of 1897, after having been partially converted into cigars and cigarettes, was exported and sold for $1,194,318, it cannot be regarded as unimportant. However, from various causes this export of tobacco, cigars and cigarettes was reduced during the time of the American military government to 3882 tons, valued at $731,800. During the first ten months of the present administration 1111 tons, amounting in value to $402,934, were exported.

LIVE STOCK

From the earliest times the raising of live stock has always been a favorite pursuit in this island. It is still of great importance, as all animals increase, thrive and fatten on the luxuriant pastures watered by the clear, running streams in every section. From the latest available statistics we have the following, showing the state of this industry in Porto Rico:

	Number of animals.	Value of each.	Total value.
Cattle	303,612	$20.00	$6,072,240
Horses	67,751	30.00	2,032,530
Hogs	13,411	5.00	67,055
Goats	5,779	4.00	23,116
Mules	4,667	30.00	134,010
Sheep	2,055	5.00	10,275
Donkeys	717	30.00	21,510
Total value			$8,300,736

These values are of course in Spanish money, that being the currency of the country when these figures were collected. The pasture lands of Porto Rico are superior to those of the neighboring islands, and 1,203,206 acres are now devoted to that purpose, and doubtless the number of animals is greater than when the enumeration was last taken. During the twenty months in which the American military government administered the custom-houses there were 2958 head of animals, principally oxen, exported, valued at $1,244,597. The annual exportation of hides amounts to more than 822,000 pounds, valued at $71,852. For the first ten months of civil administration the number of animals exported was 13,256, worth $469,268.

Doubtless the maguey, which is indigenous to the island, could be cultivated with considerable profit. Its products are the pita, or sisal, hemp, which is manufactured into linen, ropes, nets and hammocks; also pulque, an intoxicating liquor much used in Mexico.

BEE CULTURE

It has been observed that during the Spanish domination the exportation of beeswax amounted to considerable proportions. This would indicate that bee culture could be made a very profitable industry. With the Italian bees and American hives, added to the accessories of the business in use on the continent, the flowers of the coffee plant and the refuse of the sugar mills could be laid under contribution, and combined with the sweetness of the myriads of natural flowers which deck the landscape from the peak of Yunque to Cape San Francisco, tons of the most delicious honey would be produced and yield a golden reward to the industry of the bee and the skill of the bee farmer.

MINOR CROPS

It is useless to mention molasses and rum, the incidental products of the sugar cane, though they themselves are sufficient to pay all expenses of the sugar planters and leave the returns from his sugar as clear gain. The so-called minor crops, which embrace corn, rice, beans, potatoes and the like are raised solely for home consumption. A large amount of rice, which forms the principal food of the poorer people, is imported every year. It is unnecessary to import a pound of rice, the island being capable of producing more than enough for the use of all its million of people.

FRUITS

Very little attention has heretofore been given to the culture of fruits. Though excellent oranges, bananas, plantains, mangoes, aguacates, guavas, grapes, lemons, zapotes, mamayes, nisperos, cocoanuts, and other tropical fruits, grow wild in the greatest profusion. Proper culture would improve the quality and enlarge the yield, and with cold-storage transportation the markets of New York and all the continental cities could be stocked with them the year round. A 10-acre orange grove, when once in bearing, gives a comfortable income, sufficient to support a family in the best country style of Virginia or Ohio.

I consider this a fair and conservative estimate of the possibilities and products of groves of the following fruits, set on soil, in Porto Rico, that is suitable and which have proper care. The trees to be set, two years old budded stock, 26 feet apart, and pineapples of the best variety 4000 to the acre.

AVERAGE NUMBER OF BOXES OF MARKETABLE FRUIT PER TREE AT 70 PER ACRE.

Crops:	1st	2d	3d	4th	5th	Subsequent.
	Boxes.					
Oranges	1	2	3	4	5	6
Grape fruit.......	1	2	3	4	5	5

These figures are based on the assumption that rich soil suitable for the growth of citrus trees is selected for the groves, or if the soil possesses the proper physical characteristics and is lacking in plant food, that the latter shall be intelligently supplied by the cultivator in accordance with the best practice in Florida. It also implies good cultivation of the soil and general care of the groves to insure the health of the trees. Six boxes are taken as an average and not as a maximum yield, as crops of ten and twelve boxes per tree are frequently realized from mature groves under proper cultivation, and there are well-authenticated cases of trees in Porto Rico which have yielded over 20 boxes of fine, sweet oranges.

It is important to note the fact that under free trade, which Porto Rico enjoys with the United States, there is a saving of one cent a pound, or 80 cents per box, upon oranges exported from the island to the States as compared with those sent from Jamaica, Cuba, or any other foreign country. This tariff advantage is a splendid profit in itself.

PINEAPPLES

Pineapples—when planted with slips of the first-class at the rate of four to eight thousand per acre, depending on the variety and method of planting, produce the first crop in from one to two years—say an average of eighteen months from date of setting. If the large Porto Rican white, or Cabazona, is grown under good cultivation a crop of 3500 apples per acre should be realized annually. This same area will produce a crop of suckers and slips sufficient to plant four or five acres, the value of which is equal to the fruit crop.

SIZE OF FARMS

According to the latest statistics, there are 39,021 farms in this island of an average size of forty-five acres. More than three-fourths of the superficial area is included within the farms and nearly 20 percent of the entire area of the island under actual tillage. Of all the farms, fully 93 percent are tilled by their owners, and of these 71 percent are white and 29 percent are colored. Seven percent are renters.

The pineapple produces but one fruit to each mature plant per year, but the plantation can profitably remain for several years by cutting away the old plant after it has fruited and cultivating in its place one good sucker. These are produced in time to crop the succeeding year. Owing to its habit of growth, therefore, the pineapple does not, like the orange, increase its yield from year to year. It is considered good practice in pineapple growing to break up the land after from two to four crops have been produced, new plantations being made annually from the surplus of suckers and slips. The cultivation of pineapples is likely to become a great industry in the island as the climate of Porto Rico is exactly suited to its successful production, as is evident from the luxuriant growth of the plant in a wild state. It thrives on the sandy lands of the coast and on the steep rocky hills of the interior and is not injured as are many more tender crops by direct exposure to a strong sea breeze. The pineapple is a crop which can be profitably grown for several years in the vacant space between the rows of young orange and grape-fruit trees.

The larger farms are generally owned by the white farmers and the smaller ones by the colored. The principal crops of coffee, sugar and tobacco are cultivated and produced by the white farmer, while the colored farmers devote themselves to the minor crops.

The possibilities of agriculture in Porto Rico can be estimated roughly from the foregoing discussion. There is no reason why this island should not become in the near future a real garden, as carefully and closely cultivated as Holland and as productive as the valley of the Teche. With American capital and American methods, the labor of the natives can be utilized to the lasting benefit of all parties and the general good of the commonwealth.

CHAPTER III

INDUSTRIAL DEVELOPMENT

THE CRYING need of the island is above all things roads. The peculiar configuration of the insular surface and the frequent and continued rains which fall in all parts of the country render intercommunication impossible for weeks at a time except where military roads have been constructed. School houses may dot the hills and valleys to the north and south of the great central cordillera, the coffee tree may put forth its fragrant blossoms on every mountain side, the sugar cane may clothe every plane with perennial verdure, the tobacco plant may brighten and beautify every landscape, and all the forests, fields, and meadows may offer their stores of wealth to the horny hand of the industrious farmer, but of what avail are the means of education or the sources of wealth if communication is cut off between the neighboring farms and villages and the markets and seaports for lack of roads passable in all seasons and in every state of tropical weather? It is an imperative necessity to devote every dollar which can be spared from the surplus revenue to the construction of permanent roads.

ROAD-BUILDING

It is understood that nearly a million dollars was allotted to the military authorities for the building of roads throughout the island. Plans were prepared and twenty contracts made for the construction of roads and bridges. In addition, four Spanish contracts were continued in force, making altogether twenty-four contracts for the building of eighty-six miles of road, and two bridges of the aggregate length of 674 feet. But these works were scattered over the island, and the roads were built in detached sections, so that the entire amount of money would be expended and scarcely a single highway completed, thus necessitating the expenditure of much more money to connect the roads already constructed. Evidently the plans were laid with the expectation of a further appropriation to carry on the work to completion; or perhaps, the distribution of the funds to the different sections of the country may have been the principal object, in view of the plans adopted.

The money hitherto allotted for this purpose to the civil government has been carefully expended in carrying out contracts already made by the military government, and the $200,000 recently set aside for that purpose from the accumulated customs is being devoted to the filling up of the intervals between the portions of roads heretofore completed under the military contracts. With these gaps remaining the benefit of those portions constructed would be to a great extent lost, and their completion is almost absolutely necessary to the country traversed.

It should be stated in general explanation that road-building in Porto Rico is attended with many difficulties, and carried out at a great expense. The natural characteristics of the country, the severe grades, the prevalence of the rainy season with rain storms of torrential force speeding down the sides of the mountains, causing landslides or turning the ordinary roadway into the bed of a ranging stream, are of the most common occurrence.

The Spaniards were good road-builders, and their military roads are to-day in excellent preservation. It is expected that the work of American engineers will compare favorably with the work performed by the Spanish engineers upon the old roads. The general scheme of road-building under the civil government contemplated a classification based upon present and prospective needs.

The roads are divided into three classes. First-class roads embrace those of great length and width, which form the so-called trunk lines across the island and around its circumference at the base of the foot hills approaching the coast line. Second-class roads are for the most part spur roads to give better facilities for transportation to shipping points on the coast. The third-class roads are designed for the interior of the island connecting small towns and villages with main trunk lines, or second-class roads. The total length of the roads proposed in the new plan, including those already finished, is:

	Kilometers.	Miles.
First-class roads	871	540.8
Second-class roads	354	219.8
Third-class roads	182	113
Total	1,407	873.6

The cost of road-building and of road maintenance as well will always be very great in Porto Rico because of the peculiar conditions; but the present system of taxation with the growing prosperity of the island will readily take care of this necessary expense.

RAILWAYS

There has been no actual railway construction in Porto Rico during the past year or since American sovereignty. This is doubtless due to the conditions existing since the hurricane, which have not been such as to promptly invite railway transportation facilities, and furthermore, probably to a general belief that railway investments in the tropics may not be remunerative. There are in operation only 254 kilometers of railway in the whole island. It is all narrow gauge; one meter is the width of the tracks. The rolling stock is very inferior and generally in bad order. The speed is generally about fifteen or twenty miles per hour.

The "French Railroad," as it is usually called, a corporation organized in 1888 under the Crown of Spain, is now operating 211 kilometers of narrow-gauge road constructed prior to 1898. In the original concession to the company was a provision exempting the road from taxation, and guaranteeing, by the government, 8 percent on the cost of construction on a fixed price, the average price being at the rate of $18,000 per kilometer, or $28,000 per mile.

The road has steadily lost money; but this guaranty has never been paid since the American occupancy, although the representatives of the company earnestly contend that it should have been. Questions of vested rights, as involved by the treaty of Paris, have been raised and elaborately presented by the company before the executive council. The council refused to recognize any obligations under the original concession; yet, appreciating the value of the road to the commercial interests of the island, and considering all the unusual circumstances of the matter, the council has conferred with the representatives of the company, in a spirit of fairness, to the end that an arrangement might be made whereby the company could continue to operate its lines and yet do so consistently with the best economic life of the island, provided always claim of guaranty should be ignored. Several applications for land grants were also waived.

Finally a plan was suggested which is to give the company, if reorganized in America, and if waiver is had of any and all claims for guaranty, new privileges by way of lateral line franchises requiring further construction each year, to exempt the road from taxation for twenty-five years, and pursuant to an act of the recent legislature to grant the corporation a lease of land in San Juan for fifty years at a nominal rental. The bondholders of the road are, for the most part, citizens of France, the original concessionee having transferred his rights to the Societe du Credit Mobilier of Paris, which transfer was approved by royal decree of June 8, 1888.

It is believed that an adjustment of the whole question will be decidedly wise, if upon a basis which will forever relieve the island of any burden and at the same time insure further construction.

The Port American Railroad Company, a new corporation, has been granted a franchise to build certain lines to the seacoast, but as yet has not done more than to institute preliminary work to secure rights of way.

Railway construction will always be expensive in Porto Rico, because of the mountains, streams and climate. On the other hand, as the island develops and cultivation of land increases, railways will surely come, and under experienced American guidance will yield profitably to their owners.

INSULAR TELEGRAPH

Under Spanish rule there was a telegraph station belonging to the government in every town and almost every village on the island. On the American occupation the whole system was placed in charge of the U. S. Signal Corps. It was found that some instruments, which were of the antiquated tape type, had been destroyed by the Spaniards, others were said to have been taken as souvenirs, and the remainder were gathered by the Signal Corps and stored in San Juan, while the whole system was replaced by modern sound instruments, and the native operators, who were not accustomed to read by sound, were displaced. Under the military government the lines were repaired at a large expense, and were operated, until the hurricane of San Ciriaco, which destroyed many of the lines. In repairing and replacing the down lines subsequent to the hurricane, it was thought wise to discontinue a number of offices, and it was done.

The cost of maintenance under the military government was very great. The report of the Chief Signal Officer showed that from October, 1898, to November 30, 1900, the total receipts were $37,872.97, with operating expenses of $141,990.03, showing a deficit during that period of $104,117.06.

The average monthly cost to the government during the first twenty-five and six-tenths months in which the telegraph lines were operated by the Signal Corps, amounted to $4,067.67 over and above the receipts.

It was natural, therefore, that the War Department should be desirous of turning over to the civil government of the island, at the earliest opportunity, such an expensive detail, and the system was transferred, therefore, to the civil government, by order of the Secretary of War on February 1, 1901, and the transfer was accepted at that date. It now forms the Bureau of Insular Telegraph under the Department of the Interior.

On transferring the lines the military department properly asked for and was accorded the free use of the lines for public business.

Although the system, under the Spanish government had been complete and extensive, yet, curiously, no inventory could be found of the property, and not more than a dozen of the telegraph instruments which had been received from the Spaniards were on hand when the system was delivered to the civil government. The insular government paid the War Department of the United States $4428.90, which was the estimated cost of the American instruments, and the remainder of the property was turned over without further compensation.

Immediately upon taking on the system by the civil government, there was a great rush on the part of the old Porto Rican and Spanish operators to regain their old positions. In the meantime the system had been changed. Operators on the old were not familiar with the new system. It was not thought best to change. Yet it was desirable to employ native operators as far as possible. So that in order to continue the system without interruption, enough signal service operators were retained to carry on the work. Examinations were had of natives who were anxious to learn, and as the signal service men drop out their places are filled by native operators.

The system is working well, and giving a reasonable convenience to the commercial interest of the island. For obvious reasons, it will undoubtedly be many years at least, if confined entirely to insular purposes, before the system can be self-supporting, although when it is noticed that under the military government the monthly deficit was something above $4000 per month, the reduction effected under the civil government has been entirely creditable to those directly charged with operation and maintenance of the lines. Additional stations are being slowly added, as circumstances seem to require. There are at present some forty-two stations.

What is of chief public interest, however, is the fact that as at present located, the system embraces a line of wires in good order extending practically around and across the island, affording prompt and satisfactory service. There is a minimum charge of twenty cents for a commercial message of ten words or less, address and signature excluded, and two cents for each additional word. Press messages are transmitted at the uniform rate of one cent a word; the minimum charge on a press message is ten cents.

MINERAL RESOURCES

The mining possibilities of Porto Rico are considerable. It is said that considerable gold was sent to Spain from this province in the first half century after the voyages of Columbus, but it would seem that the deposits were soon practically exhausted.

Of the numerous rivers and smaller streams, the sources of which are in the highlands of Luquillo, in the northeastern part of the island, the waters of the Mameyes, Rio Prieto, Sabana, Fajardo, Gurabo, Espiritu Santo and Rio Grande are known to carry gold dust and nuggets. The rocks found in the watershed of the Mameyes River, which is the richest in gold, are mostly erurite and porphyry, crossed with veins of quartz and iron pyrites. Alluvial deposits, composed of clay, sand, bowlders and deposits of an analogous nature, form the middle and lower parts of these watersheds. The depth of the deposits is variable. Gold occurs very near the surface on the higher slopes of the hills, while in the valleys the auriferous strata are covered by sterile masses.

Gold is present also in the watersheds of the rivers Corozal, Negros, Congos, Cibuco, Mavilla and Manati. In the bed of the Congos River pieces of quartz have been found containing from eight to ten grains of pure gold each. At one time a plant for washing auriferous sands was established in the district of Corozal, which yielded from $2.17 to $4.30 per ton of sand.

There are also placers in the districts of Mayaguez, San German, Yauco and Coamo where gold is obtained in grains and nuggets. The nuggets are sometimes of considerable size and value.

It has been impossible to obtain accurate data with regard to silver. In a report prepared in 1879 by the Chief Engineer of the Bureau of Mines, reference is made to certain samples of silver found in the barrio Llanos in the district of Isabella. In other official documents the presence of silver in the northwestern part of the island is affirmed.

Copper is found in abundance, chiefly along the main chain of mountains. The minerals obtained are: ferriferous motley copper, native copper, green and blue carbonates and yellow copper sulphide, often accompanied by iron pyrites and iron oxids. The richest of the copper mines are those in the barrio of Rio Blanco, in the district of Naguabo. In one of these mines copper has been noted from the surface to a depth of twenty-five meters; first, as green carbonate, containing 23 percent of copper; then, as ferriferous motley copper; and, in some places, as yellow sulphide. According to tests made, the percentage of native copper in the ores of the Rio Blanco mines is as follows:

Ores.	Native Copper.
Carbonate of copper	85 percent.
Motley and ferriferous copper	31⅕
Cupriferous pyrites	25
Carbonate	23
Motley copper	38
Carbonate and native copper	52

In Jayuya and Utuado sands and crystallizations of yellow copper sulphide are found which contain 65.3 percent of copper. Carbonates containing from 3 to 4 percent of copper occur in other parts of the island.

Iron of an excellent quality is found in the eastern end of the island. The subsoil of this section is composed principally of feldspathic rocks, syenite being the most abundant. In the barrio of Ceiba del Norte, in the district of Juncos, is a small mountain, the soil of which consists almost entirely of mineralized iron. Surface lodes of magnetic iron extend over the greater part of the top. The depth of the lodes has not been determined. According to tests made, 61 percent of this mineral is iron.

Iron of good quality has been found also in the districts of Utuado, Luquillo, Piedras, Naguabo, Humacao, Gurabo, Patillas, San Lorenzo, and Arroyo, There are some other deposits of mineralized lead in the island. Good specimens of galena have been found in Arroyo, Mayaguez, and Naranjito. Peroxid of manganese, as well as platinum, tin and mercury, have been found in Corozal. Native bismuth has been discovered in the vicinity of Ponce.

FISHERIES

There can scarcely be said to be in Porto Rico a class of persons following the calling of fishermen exclusively for a livelihood. There are, according to a recent estimate, about 800 persons occasionally engaged in this industry, but they also now and then occupy themselves as longshoremen and farm laborers. There are, however, a large number of species of good fish to be found in the rivers and bays and in the adjacent seas, yet there is no great quantity exposed for sale in the market, and those bring high prices. Not more than three or four hundred sailing boats and rowboats are used for fishing along the whole coastline. The appliances are of the most primitive description, and poverty is apparent in all the details. If capital were invested in boats, nets, and traps, this business would soon become lucrative. Not only could the local markets be well supplied, but an extensive canning trade is within easy reach of a little money and enterprise.

FACTORIES

Manufactures in this island, aside from the production of sugar, molasses and rum, and the making of cigars and cigarettes, with a few hats and baskets, are almost unworthy of mention. There are four factories for the making of matches; soap, shoes and bay rum are produced in small quantities, and entirely for domestic use; but anything like production on a large scale is utterly unknown. The possibilities are great. Cotton can be grown economically and in great abundance, and labor is very cheap, so that if capital were invested in cotton factories, in some place convenient to shipping, the enterprise would certainly flourish. Of course, oil mills should be built in connection with the cotton gins and mills, to utilize all the products of the cotton plant. The same oil mills, when not engaged in making cottonseed oil, could be used for extracting the oil from cocoanuts, of which the sandy lands along the playas and beaches produce the greatest abundance.

COMMERCE

Commerce is in an infant state in Porto Rico in comparison with its possibilities for the future. The exports in the year 1897 amounted to $18,574,678, and the imports to $17,858,063, leaving the balance of trade in favor of Porto Rico to the extent of $716,615.

During the twenty months of American military government the imports amounted to $16,024,505 and the exports to $13,895,860, leaving an adverse balance of trade of $2,128,645. But this is accounted for by the peculiar situation of affairs. Just before leaving the Spaniards carried off everything portable, including the crops, and on the surrender of the custom-houses there was nothing left to export for some time thereafter, and a large quantity of American and other foreign goods had to be imported to supply the wants not only of the native inhabitants, but of the Americans who came in with or shortly after the military forces. The quantity of breadstuffs and provisions alone, amounting to $2,370,307, shows this inference to be correct, and it is borne out by other statistics.

For the ten months after the inauguration of the civil government the value of the imports amounted to $8,102,460, and the exports amounted to $5,814,083, leaving an adverse balance of $2,288,377. This is partly due to the effects of the hurricane, which damaged those crops from which the exports are principally drawn. The commerce of Porto Rico, though reduced in volume, is carried on chiefly with the United States, more than three-fourths of the imports and nearly two-thirds of the exports being from and to the land with which it has so lately become united by political ties.

AMERICAN TRADE

Every year since American occupation thus far has shown a decrease in the amount of goods imported into Porto Rico from foreign countries, and an increase, by a very large percentage, of goods from the United States. This is as it should be, but there is chance for a still greater increase. For while goods from all foreign countries still pay the full rate of the Dingley tariff, all goods from the United States come in free. Germany heads the list in aggressive activity, and it behooves the American salesman to wake up and take possession of a valuable market already his by such great commercial advantages. It is natural that the terms of commercial association and business relations in the way of credit from long acquaintance and business dealings with the continent must not be expected to be broken off too quickly. Many insular business houses have a resident partner in Spain or in France, who buys for the island house, securing favorable credits and incidentally a commission to himself upon all purchases. But the advantages offered directly in dollars and cents in the United States must in the end prevail.

The internal commerce of the island cannot be estimated with any degree of accuracy for lack of reliable statistics accessible. However, a general index to it can be found in the custom-house reports above referred to. As the area of the island is so small, nearly all the internal traffic is carried on directly with the coast cities, and, indeed, the lack of good roads has heretofore prevented any great amount of interchange of commodities between towns in the interior.

With an island of this size, however, the 360 miles of coastline furnish good water transportation for almost the whole country, there being scarcely a hamlet or town anywhere more than 20 miles from the seacoast. It is true that the roads from the crest of the central cordillera to the coast are in many and nearly all cases very bad in the wet season, yet the distance is so inconsiderable that these difficulties are not insurmountable. The interior transportation is carried on away from the short railroad lines exclusively by pack horses and ox carts. Taken altogether, the condition of external and internal commerce is not at all discouraging.

CHAPTER IV

POPULATION

THE CENSUS of Porto Rico was taken under the supervision of the Secretary of War in November of the year 1899. The results, in many respects gratifying to the inhabitants, are in all respects instructive. It is perhaps the very first reliable census ever taken here. However that may be, it is beyond doubt the most nearly accurate, and by far the most comprehensive in its scope. It is proposed briefly to review some of the salient features in regard to the population, their conjugal relations, their educational advancement, and the various occupations by which they obtain a livelihood. This is especially appropriate, as this census reflects the condition of the people almost at the very time when the civil government replaced the military, and the events referred to in this article began. The total population of Porto Rico is not quite a million souls, or, in exact figures, 953,243. Of these, 941,751 are natives and 11,492 are foreigners, including 75 Chinese. The females are slightly in excess of the males; there being 480,982 of the former and 472,261 of the latter.

Among the races or colors the division stands as follows: Whites, 589,426; mestizos, 304,352; negroes, 59,390; Chinese, 75. The whites are therefore in the majority over all the rest combined—that is to say, the white population amounts to 589,426 and the colored 363,817, or 61.8 percent white and 38.2 percent colored. This is a larger percentage of white inhabitants than is found in any other island in the West Indies.

Porto Rico is more densely populated than any other of the West Indies except Barbados, and some comparisons with the different States of the American Union may be at first glance somewhat surprising.

PEOPLE TO THE SQUARE MILE.

Porto Rico	260.00
Massachusetts	301.00
Rhode Island	270.00
New Jersey	214.00
Connecticut	149.00
Maryland	85.00
Delaware	82.00
New Hampshire	40.00
Kansas	16.00
Texas	11.00
Nevada	0.41

The contrast may also be made with some of the countries of Europe as follows:

England	540
Holland	384
Switzerland	189
Ireland	141
Crete	88

Thus it will be seen that the density of the population in Porto Rico is less than in England, Holland, Massachusetts, or Rhode Island, but greater than in any other country, State or island named. This island is nearly the same size as Crete, but it has a population three times as great. The relative density is nearly twice as great as Ireland and one and one-third times that of Switzerland. Compared with some of the American States we find the population of Porto Rico to be in density one and one-fifth times as great as New Jersey, nearly one and three-fourths times as great as Connecticut, three times as great as Maryland or Delaware, six and a half times as great as New Hampshire, sixteen and a quarter times greater than Kansas, twenty-three and two-thirds times as great as Texas, and six hundred and thirty-four times as great as Nevada. It has about the same population as West Virginia with less than one-sixth of the area, making the density proportionately greater. In these comparisons the latest and most authentic information accessible has been used and the compilations reject only the minute fractions.

Much has been said to the disparagement of the people of these tropical countries on account of the loose relations of the sexes and the large number of illegitimate children among them. It must be said in extenuation of this state of morals that, under former conditions and the administration of Spanish marriage laws, a wedding was a very expensive ceremony, entirely beyond the pecuniary means of ordinary laboring people.

The almost universal testimony of those who have carefully examined this question is that those people living together in concubinage are generally quite as faithful to each other as those who are legally married, and there is just as much affection for their children, and the family ties are almost if not quite as strong among them as among those of their own class who have a legal sanction to their union. The figures themselves, too, make a better showing than many writers have heretofore given from calculations and estimates based on previous Spanish enumerations.

It must be remembered further that slavery was not abolished in this island until ten years after the signing of the emancipation proclamation by the immortal Lincoln. Thus, after the lapse of a generation, we can trace the blighting effects of this baleful curse of the human race. Those who have felt the galling weight of its fetters should not be judged too harshly.

OCCUPATIONS

In regard to occupations, as may be readily supposed, the great majority of the working people of Porto Rico are engaged in agriculture. About half a million people are of an age at which some useful employment should ordinarily be followed. Of these, 198,761 are engaged in agriculture, mining and fishing. Very few, however, follow the latter two occupations, probably not more than 1000. So it may safely be estimated that there are nearly 198,000 agriculturists in the island. There are, besides, 64,819 laborers, who are supposed to be engaged in other pursuits than tilling the soil.

In manufacturing and mechanical trades there are enumerated 26,515; in commerce and transportation, 24,076. The professional class is limited to 2194, of whom 124 are clergymen, 206 lawyers, 219 physicians, and 809 teachers. The rest are engaged in various other professions. The great army of the unemployed has a corps amounting to 183,635 in this tropical island. Of these, about one-third are men and two-thirds women. These facts, of course, complicate the labor problem already sufficiently difficult.

Vital statistics for the eleven years 1888 to 1898, inclusive, show a death rate exceeding the birth rate in the island, but unquestionably the registration in the former is more complete than in the latter particular. For these years it appears from the report that there have been born in this island 272,454 children, making an annual average of 24,768. At the same time the deaths for the same period amount to 291,166, being an average of

26,469 annually. The average annual excess of deaths over births is 1701. Both in the number of births and deaths the males exceed the females to a very considerable extent.

Since the advent of the present administration the death rate in the island has materially decreased; for instance, it was 58.4 per thousand in August, 1900, and only 23.6 in February, 1901. However, the statistics in regard to births are hardly more reliable than they were during the Spanish regime. A registry of deaths is comparatively easy to keep correctly, especially in a country like this where the desire is almost universal to be buried in consecrated ground. But parents think it a great hardship to be compelled to register the births of their children; and this is very inconvenient in the rural districts. In addition to natural disinclination to take trouble, a large proportion of births have been attended by women calling themselves midwives, but who are unable to read or write.

The looseness of the marital relations also tends greatly to complicate the difficulties of obtaining correct information as to the birth rate. As the population is steadily increasing, this deficit, if the figures were correct, must have been more than made up by immigration, but no such influx has occurred. The census of 1860 gave the island a total population of 583,308; that of 1877 increased the number of 722,604; that of 1887 showed a further increase to 806,798. The Spanish census of 1897 has not been completed or published, or at least figures are not available, but it would probably have shown about 900,000 or perhaps more. Thus, there has been a steady increase from 583,308 in 1860 to 953,243 in 1890, or 369,935 in forty years, or an average of 9248 souls annually, or a little more than 1.5 percent.

Illiteracy has been reported at a very high rate. It is said that in 1860 over 90 percent of the population was unable to read; and some of the commissioners and travelers who have visited this island since American occupation place the number of illiterates at 85 percent. There is, of course, an allowance to be made for estimates, and the term illiteracy may be taken to mean inability to read and write or inability to write while being able to read. Considering a person to be illiterate who cannot both read and write, the last census shows the illiterates in this island to be 79 percent of the population more than ten years old. The total number of people who have attained the age of ten years is 659,294; of these 134,416 can both read and write, while 524,878 are unable to write, though a fair proportion of them are able to read. Of these illiterates, 307,030 are white and 217,648 are colored.

Taking into consideration the relative numbers of the two races, by far the largest percentage of these illiterates is colored. This of course is to be expected from existing conditions. Poverty and ignorance in the tropics, as elsewhere, go hand in hand; and slavery, which existed here within the memory of persons still young, was the handmaid of both these evils. At the present time about 40,000 children are in the free public schools of the island. Religious societies maintain schools for many thousands more. The influence of schools is felt in many homes.

It is safe to say that illiteracy has decreased at least 6 percent, and perhaps 8 percent, during the present year, reducing the percentage to about 72. It must also be borne in mind that many children who knew but one language a year ago now use two fluently, and while this is no gain in the percentage of literacy, it is a tremendous gain in general intelligence, and especially in the power of the people to grasp and enjoy free civil life under American ideals. There is an almost universal demand among children and parents for the English language, and many American teachers are employed constantly in giving extra lessons in English. Thousands of children now read and speak the English language, and thousands more are learning it rapidly.

CITIZENSHIP

At least as far as the exercise of the privilege of suffrage is concerned, citizenship should and, in this island at least to some extent, does depend on education. The male persons over twenty-one years of age in Porto Rico number 210,071. Of these, 7766, or 4 percent, are foreigners, leaving 202,305 natives of voting age. Of these, 120,295, or 60 percent, are white and 73,010, or 36 percent, are colored. Now, of the white men 35,397, or 29.4 percent, can read; and of the colored, 12,576, or 17.2 percent, can read, leaving 70.6 percent of the whites, or 84,898, illiterate, and 82.8 percent of the colored, or 60,484, illiterate. Applying the reading test to the entire adult male population would reduce the number of voters to 49,973, or about 24 percent of all adult males. In the last election a small property qualification was allowed to supply the place of the reading test, and thus the registration of voters numbered 123,140. Of the 4 percent of adult male foreigners, three-fourths are natives of Spain, who claim their Spanish citizenship.

IMMIGRATION AND EMIGRATION

The movement in the population in the island of Porto Rico during the last ten years has been inconsiderable in proportion to numbers. In the absence of any official means of collecting statistics on this subject, all figures are necessarily mere estimates. Of course when the Spanish forces left the country a goodly number of persons for various reasons returned to the Iberian Peninsula, and when the American army came in it brought in its train a large number of civilians more or less connected with it by business relations or otherwise.

A small number of American business men also came to the island, following the flag, and some of them have determined to make it their permanent home. But their numbers would make up a very small fraction of a percent when compared with the total population. The census shows a little over one percent of foreign-born people on the island, and a majority of these are Spaniards remaining over from the old regime. There are not in the whole island more than 1000 Americans outside of the military service. The dense population of Porto Rico is almost entirely native.

Heretofore emigration has been almost unknown. These islanders are essentially a home-loving people, and remarkably attached to their native land. But particularly since the hurricane of San Ciriaco some of the poorer class of laborers have found it difficult to procure the means of a livelihood.

The Government has expended large sums of money on road-making in various parts of the country especially to give employment to the needy. But in many cases they have declined to avail themselves of it, sometimes alleging that they could not leave their homes to go ten miles away. If for any reason the particular sugar plantation or coffee farm on which they had been accustomed to labor did not longer need their services, it would not seem to occur to these simple peasants that by moving over to the next township they might find employment. Many of them would prefer to remain in idleness until some one solicited their services. A few potatoes and bananas will sustain life, and clothing is a luxury in this climate.

In this state of affairs the emigration agent found an excellent field for his enterprise. He penetrated the rural districts and offered golden inducements to these simple folk to travel and see foreign lands. Laborers are wanted in Hawaii to work in the sugar fields and in Cuba for the iron mines. Good wages were offered, and many were persuaded to emigrate. They embarked at the seaport towns of Ponce, Mayaguez, and Guanica. Very few left San Juan.

Adventurous boys now and then seek to escape from paternal control and to experience the novelty of foreign travel. But there have been very few cases of minors being solicited to leave or accepted as emigrants, and in every instance when demanded they have been returned to their parents. Most of the emigrants are of the very poorest class of laborers, many of them without a box or a bundle or anything whatever more than the scanty apparel in which they stand upon the wharves. Very few of them have the least rudiments of education. In other words, these emigrants comprise the least desirable elements of this people.

Most of them have gone to Honolulu, some thousands have gone to Cuba, and a few to Santo Domingo. The Federal faction has persistently endeavored to stir up discontent in the island on account of the departure of these laborers and their wives and children, and has called on the insular government to prevent their emigration. This has not been attempted, because, in the first place, it is the privilege of every person to emigrate if he chooses so to do, either with the hope of bettering his financial condition or finding a more agreeable residence. The humblest bare-footed peon in the forests of El Yunque has the same right to expatriate himself if he chooses as does the millionaire. And, in the second place, the emigration of these people can do no great harm to the island. Out of a population of nearly a million, less than 5000 or 6000 have emigrated—scarcely one-half of 1 per-cent. They will never be missed in making up the census returns of the next decade. Porto Rico has plenty of laborers and poor people generally. What the island needs is men with capital, energy, and enterprise to develop its latent industries and to reclaim its sugar estates; to build factories and railroads, and make the country hum with the busy sound of commerce.

CHAPTER V

SOCIAL AND FINANCIAL

THE PROPER training of youth is an interesting problem everywhere, and has been since the days when ancient Persian princes were taught three things—to ride, to shoot, and to tell the truth. But in no part of the world perhaps is education a more interesting question than it is now in Porto Rico. Ever since the Americans landed at Guanica attention has been directed to this subject; and certainly since the inauguration of civil government it has received its share of careful consideration.

From the 1st of May to the 6th of August, 1900, the insular department of education was in charge of Dr. G. G. Groff, as acting commissioner.

Dr. M. G. Brumbaugh, who previously had been appointed commissioner of education, arrived in Porto Rico on the 4th and took charge of his office on the 6th of August.

It has been said by a high authority that "Guatemala is the only country in the region for which statistics are obtainable where the proportion of illiterates is higher than in Porto Rico." Then "the field is ripe for the harvest," and reapers must not be wanting. The census of November, 1899, states the number of children within the scholastic age in Porto Rico to be 322,393. Of these, 25,798, or 8 percent, were in attendance on the schools. Of course the percentage is larger in cities and smaller in the rural districts. However, there are only three cities on the islands, San Juan, Ponce, Mayaguez, with an aggregate population of 75,000 souls. Of the 322,000 children of scholastic age, only about 38,000 have yet been gathered into the school-rooms, leaving the enormous number of 284,000 yet unprovided for. The magnitude of this work is startling. It cannot be accomplished in a day or a year. Even were the necessary funds in reach, the mere routine work of organization and enrollment would require months to complete it.

There are engaged in this work, besides the commissioner and his office force, amounting to thirteen men, sixteen supervisors and 796 teachers.

These teachers are divided into four classes:

First. Principals, of whom there are 39.

Second. English teachers, of whom there are 127.

Third. Graded teachers, of whom there are 221.

Fourth. Rural teachers, of whom there are 409.

AMERICAN TEACHERS

The teachers of English are for the most part Americans; the others are natives of Porto Rico. The salaries paid to the teachers are small, but about the same as elsewhere in schools of a like grade, being $75, $60, $50, and $40 per month, according to grade. Those teachers who have come from the continent are generally doing good work; but let no young person go to Porto Rico seeking employment as a teacher merely for the sake of novelty, or expecting to amass wealth rapidly. Those who do so will surely be disappointed or soon grow weary of their surroundings and outlive their usefulness.

What is urgently needed in this connection is a first-class normal school for the education of native teachers and to fit them for the great work of properly educating their illiterate countrymen. Such an institution is indispensably necessary and one is already nearly completed.

MORE INSTRUCTORS NEEDED

There are 800 schools on the island, on an average one to every 3.5 square miles. The number certainly appears adequate if they are large enough. To instruct all the children of scholastic age, however, each school should have 403 pupils, and there should be employed over 8000 teachers. So a school force ten times as great as at present is really needed. There is but one school-house on the island which was built for the purpose. Not half a dozen schools are taught in public buildings. As a rule, the schools are taught in houses rented for the purpose, and in some cases fitted up to serve for schools.

Some of them are fairly good, but the great majority are inadequate in size and destitute of all proper appliances. Many of them are unsanitary, and some of them are insufficient to protect the pupils and the books from the rains that fall with such frequency and abundance in the wet season. However, the $200,000 allotted to this purpose by the President is being judiciously expended in the construction of schoolhouses, and the next annual report will have a different tale to tell.

PROPOSED HIGH SCHOOLS

The course of instruction in most of the schools is at present elementary, but as the pupils progress in sufficient numbers the curriculum will be advanced to meet their requirements, and a high school will be established in each important town as soon as there is work for it to do. Of course, with three-fourths of the population over ten years of age unable to read a newspaper, the elementary branches should for some time occupy the minds and engage the energies of the teachers now working. It is better that 300,000 children should be taught to read and write and cipher than that 40,000 should learn botany, chemistry, grammar, rhetoric and astronomy. The motto of Jeremy Bentham, "The greatest good to the greatest number," has a peculiarly appropriate application to the educational conditions in Porto Rico.

Higher education has not received its proper consideration heretofore in the island. Although there are some very highly educated people among the residents in city, town, and country, the proportion of the well educated to the comparatively illiterate is small. Out of a population of nearly a million, only 5000 enjoy the benefits of a superior education; that is to say, only one-half of one percent.

Of course this state of affairs cannot continue under the American flag, but for some few years to come it is very probable that the young Porto Rican seeking a college or university education will have to visit the continent, and Yale, Harvard, Cornell and Amherst may bear Porto Rican names on their registers for years to come. The people are in earnest about the matter, and one of the first laws enacted by the people of Porto Rico was one providing means to send their young men and women, to the number of forty-five, to the United States for education.

CHARITIES

The board of charities, created by military order on the 30th of April, 1900, was in existence just ten months, having been abolished by an act of the legislative assembly, and a director of charities was provided for, to be appointed by and to report directly to the governor. The sanitary condition of the charity schools was found to be unsatisfactory, and an expenditure of $5148 was required to remedy these defects. This has now been accomplished. The school children were put into uniforms, and military regulations and discipline introduced as far as possible, especially in the boys' school.

The shops in connection with the boys' school are intended to teach the pupils tailoring, shoemaking, carpentering and baking, and it is proposed to enlarge their capacity and add other occupations from time to time, as available funds will justify. The girls are taught sewing and such other useful arts as will qualify them for domestic service or housekeeping.

There are at present 196 pupils in the girls' school and 248 in the boys' school. The former is designed to have a capacity of 200, and the latter of 300. There is a waiting list of 200 girls and 302 boys. The inability of the authorities to admit all those entitled to enter is greatly regretted. It is designed to equalize the attendance in both of these charity schools among the different municipalities in proportion to population as rapidly as possible. At present the city of San Juan has far more than its proper proportion of pupils in attendance; but this condition was found in existence at the time the civil government took charge, and it could not be adjusted immediately. It will be done gradually.

The condition of the insane asylum was also very undesirable. Work was begun at once to enlarge the accommodations and to improve the conditions. It is now furnished with a reading room, a music room, an infirmary, and other necessary apartments. The dormitories have been enlarged and greatly improved. The inmates now number 154, evenly divided between the sexes.

The condition of the lepers, of whom there are probably about sixty on the island, early claimed the sympathetic attention and fostering care of the administration. It was deemed best to colonize these afflicted people on an islet within easy reach of the attention of which they are, and must be, in constant need, and still far enough removed to prevent all danger of contagion. Accordingly, after careful consideration and investigation, the Isle de Cabaras (Goat Island), at the entrance to the harbor of San Juan, was selected and buildings fitted up, and the lepers were removed to the colony in November. There are now seventeen leprous persons in the colony, attended by the necessary employees. The remaining lepers, now at large on the island, will soon be conveyed to the colony, where they can be properly cared for without danger to the other inhabitants.

The cost of maintaining the department of charities has been remarkably small in comparison with the amount of good that has been accomplished. It is believed that the financial management will compare favorably with any similar institution in the United States. The average daily cost of subsistence per capita is 12.5 cents, and the average total daily cost per capita is 32.88 cents. That of the girls' school is only 10 cents for subsistence and 23.65 cents for the total expenses.

This great work of caring for and educating orphan children, so that they may become useful members of the body politic, it is believed, is being properly pursued in the island of Porto Rico. While it is designed to care for and educate every orphan boy and girl who need such assistance, care is taken not to pauperize the population or to undermine the independence of the individual. The object is to give these bereft children an even start in the race of life with their more fortunate fellows, who are blessed with the fostering care of parents and friends. When this is accomplished they will be expected to make their own way and work out their own careers.

HOSPITALS

The hospitals are not directly under insular control, their support, inspection and government being left to the local authorities in each municipality. In the sixty-six municipal districts into which the island is divided, there are forty hospitals or structtures which are called by that name. In many cases they are mere sheds, without proper equipment or attendance. There are also nineteen asylums, of which the same remark in a less degree might properly be made. The hospital buildings in Ponce, Mayaguez, and Arecibo are good enough, but in the capital city the chief municipal hospital is a mere shanty, badly equipped, and destitute of many essentials. But there is also in San Juan a small hospital, founded many years ago and managed by the Sisters of the Immaculate Conception, which may be classed as a model of its kind, but being supported by public contributions is often in lack of funds. The Tricoche Hospital of Ponce is an excellent building, and the service is good, but it is faulty in sanitation. The hospital in Arecibo, though in a commodious building, is badly equipped and destitute of all pretensions to sanitation. The two hospitals at Humacao were destroyed by the hurricane and have not yet been rebuilt.

More than one-half of the population of the island is unprovided for with any sort of hospital accommodations, and in those towns and villages where the hospitals exist they are badly constructed, inefficiently equipped, wretchedly managed, and almost destitute of any proper sanitation. There is a new smallpox hospital just finished in Ponce, at a cost of over $1300, largely raised by private contributions, but it is hoped that it may not be necessary to use it long, and prudence may require its destruction. There is no doubt that the whole subject of hospitals and asylums throughout the island would be much better managed if it were placed under the control of the superior board of health and the director of charities. In fact, a complete reform and reasonable efficiency cannot be expected until this is done. But there is much to be done elsewhere in the same line, notably in the care of the blind, the paralytic, the epileptic, and other incurables, also the aged paupers and other unfortunates, for which the current revenues are at present inadequate.

CHURCHES

As churches in a Christian land are universally regarded as an index to civilization and progress, it is proper to refer briefly to their affairs. Out of the 953,243 inhabitants of Porto Rico, there are nearly 950,000 Catholics; and there is a Catholic church in every town and village, and in the larger towns and cities several. In the city of San Juan there are eight, including the cathedral. Nearly all these are well-built structures, occupying central locations, and are ornaments to the towns where situated. There are many parochial schools and other church institutions belonging to the Catholics. The business and services of this church are administered by the right reverend bishop and his parochial and other clergy, numbering over 100 priests. There are eight Protestant denominations represented on the island, to wit: Baptists, with five ministers, twelve congregations, and 895 adherents, all natives; Christian Brethren, with one minister, one congregation, and 100 adherents, of whom ninety are natives and ten foreigners; Congregationalists, with one minister, two congregations, and 100 adherents, of whom ninety are natives and ten foreigners; Lutheran, with one minister, three congregations, and 150 adherents, of whom 100 are native and fifty foreign; Methodists, with seven ministers, ten congregations, and 1000 adherents, of whom 800 are native and 200 foreign; Presbyterians, with four ministers, twelve congregations, and 1500 adherents, of whom 1350 are native and 150 foreign; Protestant Episcopalians, with four ministers, three congregations, and 450 adherents, of whom 300 are natives and 150 foreigners; United Brethren, with one minister, one congregation, and 100 adherents, of whom ninety are natives and ten foreigners.

The Christian Brethren also have an orphanage. The Congregationalists have two schools, with seven teachers. The Methodists have one school, with five teachers and forty-eight pupils, of whom forty are native and eight foreign. The Presbyterians have six schools, with eight teachers and 310 pupils, of whom 300 are native and ten foreign. They also have one medical missionary. The United Brethren have one school with one teacher. So the Protestants have in the aggregate on the island twenty-four ministers, with forty-four congregations, having

4295 adherents, of whom 3715 are native and 580 foreign, with ten schools, twenty-one teachers, and 340 native pupils. Where the public schools are so inadequate, certainly the teaching of even 300 or 400 pupils is valuable assistance to the cause of education.

None of the public money is now used in the salaries of clergymen or otherwise in support of religion. All such expenses are defrayed, as in the United States, by the voluntary contributions of the congregations and friends on the continent. The controversies formerly existing between the municipal and the church authorities, concerning the ownership of church property; have not yet been settled. As in all other countries, the women are much more regular attendants on church service than the men, and perhaps religion is in no worse, certainly in no better, condition than in the large cities of the United States.

FINANCIAL

In making a somewhat comprehensive discussion of the financial condition of Porto Rico it is best to survey the field as it was presented on the date when civil government was instituted. It is true that the revenue laws had been tested and found inadequate to a fair apportionment of the burdens of government upon the inhabitants of the island.

It was evident that many of the wealthy classes were escaping taxation, and those less able to pay were saddled with onerous taxes out of all proportion to their means. Clear proofs were not wanting that great injustice was done also in the collection of the taxes that were raised under the existing levies. It did not require one very long to become satisfied that a radical reform was necessary in the whole revenue system. Had it not been for the 15 percent tariff provided for in the organic act, there would have been a lack of sufficient funds to meet the most ordinary requirements of the government.

The expenses of the civil government must of necessity be in some respects greater than those of the military. The salaries of the military officers who filled civil positions were, of course, paid out of the funds appropriated for that purpose by the general government. Then the public schools must necessarily be multiplied and school-houses constructed; the insular police must be increased in numbers to take to some extent the places of soldiers who had been withdrawn; the code commission provided for by Congress had to be paid by the island; public roads had to be constructed and repaired, and all debts of former administrations had to be provided for.

All this must be compassed within the sources of revenue provided for in the organic act without the American treasury to rely upon to make up any deficiency. It, then, behooved the government to look well to the resources which were in hand wherewith to meet all these requirements.

A recapitulation of the resources of the island at the control of the civil government, while interesting, are hardly within the scope of this article, and anybody interested can readily refer to the figures in the official publication. It is sufficient, perhaps, to say that they were very meagre, and the financial future was looked to with many misgivings. By a close system of economy, and a rigid accountability in all departments, the current income was made not only sufficient for current needs, but actually to allow a steady growing surplus. The organic act, however, had contemplated the enactment of a system of tax laws and of excise revenue for the needs of the island, and at the first session, the legislature of the island addressed itself to that important and interesting question.

Clearly, in order to better the financial situation, there were two courses open—one to reduce expenses and the other to increase the revenues. Both of these means were attempted. Owing to the peculiar relative circumstances surrounding the new government just inaugurated the first was very difficult to accomplish for reasons heretofore given; it then remained the more necessary to succeed in the second. As no change in the laws was immediately practicable, it was of first importance that the machinery at hand for raising revenue should be used to the best advantage. The insular treasurer at once set about this, and having organized a competent corps of revenue agents, succeeded in raising the revenue from internal taxes from the average sum of $19,823 to $50,870 per month. But all the while, from month to month, the urgent need of a great change in the system of taxation became more and more apparent.

The treasurer, with such aid as was afforded him, at once set about the preparation of a tax law which should embody the views of the administration on this important subject, and within a few days after the legislative assembly met had the result of his labor ready to submit to the committee on finance in the executive council. With some amendments it was reported to the council, and after having been discussed and amended in both chambers and in a conference committee, it was passed and presented for executive approval, which was promptly given.

TAXES

The revenue act consists, in the main, of a property tax, an inheritance tax, and a system of excise taxation. The property tax replaces a territorial tax which was laid upon agricultural estates, though graded according to the quality of the soil, and upon urban property took the form of a percentage of the net income. The rate of the new tax for insular purposes, for the fiscal year 1901-1902, and thereafter until otherwise provided by the legislative assembly of Porto Rico, is fixed by the statute, at one-half of one percent, and provision is made that the rate levied for local purposes shall in no case exceed an additional one-half percent. The maximum direct tax upon property in Porto Rico is thus one percent, which is less, probably, than the rate in any community in the United States, and certainly less than in any European country.

The tax itself is not noticeably different from the more advanced forms of the property tax as known in the United States. All property, not specifically exempt, is nominally assessed at its present actual market value, but an extensive list of exemptions has been made, including all persons whose property is valued at less than $100; the buildings, appurtenances and land, not exceeding five acres in extent, set apart for educational or charitable purposes, or exclusively for religious worship; household furniture, wearing apparel, fuel and libraries.

Working tools and the crops and products of farmers and planters have been exempted. Provision is made for the exemption of indebtedness to the amount and extent of the assessed credits, and mortgages are treated as an interest in the property, so that the mortgagee will be charged with and the mortgagor exempt from the taxes on the value of the property represented by the mortgage, except where the latter contains an unequivocal covenant making the taxes payable by the mortgagor.

One noticeable change effected by the new revenue act is the machinery of assessment. Hitherto the assessment of property and income had been made by nearly two hundred separate boards appointed by the councils of the sixty-six municipal districts. There was no central control, no unity of administration, and no uniformity of valuation.

Under the present law the whole assessment is in charge of a supervisor, appointed by the governor with the consent of the executive council. The supervisor appoints the division assessors, with the consent of the treasurer, and the division assessors nominate, and the treasurer appoints, enough district assessors to complete the assessment within the required period. There is perfect unity of control, and the division assessors, being in closest touch with both the supervisor and the district assessors, secure an equality of valuation hitherto unknown. Tax appeals are heard in the first instance by select groups of division and district assessors sitting as boards of review, and in the last instance by the executive council, sitting as a final board of equalization and appeal.

Important changes have also been made in the machinery of collection. Under the Spanish regime direct taxes were collected by a private company for a percentage of the receipts. The military government placed the collection in the hands of public officials, but instead of a salary paid them 8 percent of their collections. The reform has now been completed by placing the collection in the hands of bonded and salaried collectors appointed by the treasurer. In this connection it may be stated that the severity of the Spanish "appremio," a purely administrative process by which property was sold for delinquent taxes, has been modified by the insertion in the law of a period of redemption, during which property so sold may be redeemed.

CORPORATION TAXES

Corporations have been treated substantially as unincorporated concerns; they are assessed by the treasurer upon the actual market value of their capital invested in Porto Rico. The spirit of fairness exhibited in this uniform treatment of private and incorporated companies should make Porto Rico a desirable place of business for companies of the latter kind. If a year's trial proves the unsuitableness of this kind of taxation for corporations, the government will thus have what it does not possess at present—the data concerning the assets and profits of corporations which it is necessary to have in order to provide distinct corporation taxes which will be equivalent to the property tax.

The excise taxes are imposed upon the manufacture and shipment and importation of proprietary medicines, playing cards, firearms, oleomargarine, matches, alcoholic liquors, and tobacco of all kinds; the taxes are paid by means of stamps, and, temporarily at least, surcharged internal revenue stamps of the United States are being used.

Fortunately for the manufacturers of rum and tobacco and for the insular treasury, the organic act specifically exempts Porto Rico from the operation of the internal revenue laws of the United States, and the legislative assembly of Porto Rico, in imposing excise taxes upon the above-named articles, has taken into account the fact that the rum and tobacco industries, while relatively much more important, are much weaker than the corresponding industries in the United States. In consequence, the rate of the excise taxes is just about one-half that collected in the United States.

The revenue act annuls all octrois or municipal consumo taxes upon the articles subjected to excise taxes, and the territorial and industrial taxes, in so far as insular taxation is concerned. The insular territorial tax at present is probably about 4 percent of the net income from property. Capitalizing this at the high rate of interest obtainable—certainly as high as 12 percent—and it is seen that the present insular rate of one-half percent upon the value of the property will be very little more burdensome than the territorial tax upon those property owners who are actually paying upon an honest assessment, assuming that the assessment of property conformed to the letter of the law and the appraisement is made at its actual value.

The industrial and commercial tax is placed by the ordinary property tax upon the stock and other assets of business concerns. The abolition of the industrial and commercial system is possibly the most beneficent feature of the whole law. The inheritance tax simply replaces the heavier and more complex tax of the same kind imposed by the Spanish government and unfortunately abolished by the military government. The excise taxes are, in general, somewhat higher than the consumo and excise taxes existing at the time of the passage of the revenue bill. But there can be no calamity in diverting into the public treasury an increased portion of the money that would be spent for rum and tobacco, to be applied by the government to the building of roads and the better education of the people.

Under the operation of this law, which has been found in practice to work admirably, the income of the island has been found quite sufficient for its current wants, and the law itself has proved sound and popular. Under its operations the burden of taxation has been most generally distributed, so that its weight has not been distressing to any class. It has often been claimed, and never disputed that under the present system, there is not another civilized country in the world so fairly, lightly, and adequately taxed as Porto Rico, under the civil government instituted by President McKinley.

The improved condition of the country is the best indication of the working of the new civil laws. Industries are increasing, articles subject to excise are gaining fast. In tobacco alone there has been an increase in the past year of manufacturers from 170 to 604. And during the same time the amount of taxes paid on manufactured tobacco increased from $8146 to $25,203; and the tax on rum from $9952 to $42,112.

CLAIM OF PORTO RICO AGAINST CUBA

For more than thirty years past the island of Porto Rico has been called on from time to time to advance money from the insular treasury to the island of Cuba. In this way more than $4,000,000 has been lent by the one island to the other, of which nearly a million and a half has been repaid in various sums. There is a balance of $2,253,516.55 due from Cuba to Porto Rico. This matter has heretofore been laid before the Department of State at Washington, asking that the United States as trustee settle the claim, while the affairs of Cuba were being administered by the American government. This appeared to be a proper course to take in the matter because the claim is a plain and simple obligation, never disputed, for which vouchers are on file in the War Department. An early settlement of the claim, involving as it does a large amount of money, would have a very important bearing upon the financial problem in Porto Rico. The United States government reported in connection with the matter that it had "postponed consideration of all such claims until Cuba shall have established its own independent government."

PUBLIC PROPERTY

The people of Porto Rico own, as a heritage from the Spanish regime, a considerable quantity of public lands, buildings and grounds, roads and bridges, and there are, besides, harbors, light-houses and forts which belong to the United States. Not the least among these assets are roads and bridges. At the time of the American occupation there were found 255 kilometers of good roads completed in the entire island.

The most important public road is the so-called military road from San Juan to Ponce, a distance of 134 kilometers. Other roads reach from Cayey to Arroyo, from Cantano to Bayamon, from Rio Piedras to Mameyes, from Caguas to Guarabo, and there are uncompleted portions of other highways. All told, the length of completed roads at present amounts to 367 kilometers.

The public buildings are fairly numerous and well constructed. Some of the buildings and grounds are claimed both by the insular government and the United States, as well as by ecclesiastical bodies and municipalities. These conflicting claims should be adjusted at an early day. There are also piers and wharves, some buildings and adjacent lands used in connection with the harbor works, also machine shops, tools and sheds, and a floating plant, including two tugs, which belong to the island.

The Attorney-General has recently given an opinion that the public or " Crown " lands in Porto Rico under the treaty of Paris passed to the United States. If this be so, Congress will very likely be called upon to adjudicate the question, and one can feel very certain will make some adjustment of the question by which the island will enjoy the possession of this valuable property.

CHAPTER VI

GOVERNMENT

WHEN the civil government assumed control of public affairs in Porto Rico of course the military forces were primarily charged with the maintenance of public order. These consisted not only of the regular troops stationed here, but also of eight companies of volunteers in the United States service known as the Porto Rican Regiment. Their efforts were supplemented by the municipal police in each town and municipality throughout the island, and by the insular police, which at that time numbered 420 officers and men under Colonel Frank Techter as its chief. These peace officers were kept moderately busy preventing disturbances and making arrests for infractions of the law. The municipal police, however, were found to be in a great degree inefficient, owing to various causes, and the legislative assembly passed an act increasing the force of the insular police and abolishing the municipal police except in six of the larger cities and towns, and authorizing the governor to replace the police of those places at any time with the insular police.

By the same act the potential strength of the insular police was increased to 739 men. Since the adjournment of the legislature, on petition of the city council of San Juan, the municipal police in that city have been abolished, and their places supplied with a detachment from the insular force. The change has been found to be beneficial. The insular police now number 664 all told; consisting of a chief, an assistant chief, four captains, seven first lieutenants, five second lieutenants, eleven sergeants, seventy corporals, and 565 privates. They are stationed at sixty-seven different places over the island. They cost the government during the first ten months of the year $160,648.30, a monthly average of $16,064.83, or an average of $29.16 for each man per month. They made during the eleven months ending on the 31st of March 3902 arrests for various crimes and misdemeanors, ranging from murder to gambling, and including escapes from prisons and petty misdemeanors. On the whole this little island has been reasonably orderly and law-abiding under the control of the civil government.

PRISONS

Spanish prisons have an unsavory reputation, and have had since the days when Drake and his compeers sailed the southern seas in search of the treasure ships laden with the gold of the new world on its way to the King's coffers in Madrid. Porto Rico, like other Spanish provinces, had many a faithful copy of the prisons of the peninsula, and one of the first labors of the American military government was to empty the jails of forgotten prisoners and to moderate in some degree the reeking filthiness which made them veritable pest holes, and eventually to clean them up and reduce them to something like good sanitary condition.

There are at this writing less than a thousand prisoners, all told, in the five prisons of the island; in exact numbers, 993. Of these, 154 are for homicide and 223 for other felonies, making altogether 377 felonies and 616 misdemeanors. Out of the whole number, 453 are incarcerated in the penitentiary at the capital and 540 in the four jails in the principal cities of the island. Altogether, 134 prisoners are awaiting trial and 859 are undergoing sentence. Only five women are incarcerated in the whole island of Porto Rico. When it is considered that there are nearly 1,000,000 people on this island, the number of prisoners is very small, only one person in every 1000.

The last legislature created the office of director of prisons, and placed it under the direct control of the governor.

INSULAR GOVERNMENT

The scheme of government for Porto Rico is set forth in the act of Congress passed on April 12, 1900, and which took effect on May 1 thereafter. Under this law the powers of government are, on the

American plan, lodged in three separate bodies of magistracy—the legislative, the judicial and the executive. The legislative power resides largely in the Congress of the United States, but in local matters is committed to the legislative assembly composed of the house of delegates and the executive council. The judicial power is in the courts of the United States and in the supreme and inferior insular courts. The executive is confined to the governor of Porto Rico, advised by the executive council. The latter body, whose functions are partly legislative and partly executive, is composed of the insular secretary, the attorney-general, the treasurer, the auditor, the commissioner of the interior, and the commissioner of education, together with five native members duly appointed to the office.

All appointments made by the governor are subject to confirmation by the executive council. The several heads of departments, as such, assist the governor in carrying on the business of the executive department.

LEGISLATIVE

The organization of a legislative body in a country where such an institution was totally unknown, and where the laws had been for more than four centuries manufactured for the inhabitants by a minister of the Crown in a city thousands of miles across the sea, was to all appearances an appalling task. But when it had to be done and the labor was begun, with the determination to accomplish it and to make it a success, difficulties apparently insurmountable began to vanish one by one, and finally the legislative assembly reduced itself to good working order.

In practical business the executive council has a great advantage over the house of delegates. A majority of the members of the council were men of some experience in parliamentary practice and quite able to cope with the new conditions by which they were surrounded. Not a single member of the house before their meeting had any parliamentary experience whatever. However, they were fortunate in their selection of a speaker, and when they had become somewhat accustomed to the noise of the mill were able to manage the machinery of legislation.

The council, composed of eleven members and being the smaller body, with some experience, and presided over by Judge Hunt, a legislator and a jurist of wide experience, was able easily to take the lead in all important measures, and nearly two-thirds of the bills which were finally passed originated in this chamber. It proved also, as has always been intended for similar chambers, to be a valuable conservative force in the onward rush of progressive legislation.

The code commission appointed by the President under the organic act and confirmed on June 5, 1900, consisted of Hon. Joseph F. Daly, of New York; Prof. L. S. Rowe, of Pennsylvania, and Dr. Juan Hernandez Lopez, of Porto Rico. The continental members of the commission met in New York, and there held a series of conferences in July and August, and early in September the whole commission met in San Juan and held a series of public hearings. After remaining about ten days on the island, Judge Daly, the chairman of the commission returned to New York. He again visited the island in March and remained about five weeks. On December 16, 1900, a resolution was passed by the house of delegates requesting the commission to submit to it such drafts of acts as had been prepared. Pursuant to this request, the commission sent to the two chambers drafts of a judiciary act, a habeas corpus act, a law relating to marriage and divorce, a country law, a city law; a village law, an insular charity law, an insular sanitation law, and a transfer and succession tax law. None of these met the approval of the legislative assembly, though possibly some of the features of the last were adopted in the revenue law which passed the two houses. By the law under which it was created, the life of this commission was limited to one year, expiring on April 12, 1901, and it was required to report direct to Congress. It is understood its report is just being printed by Congress (April, 1902), about one year after its work was completed.

In view of the foregoing facts and the further fact that it was considered that the organic act gave to the legislative assembly full legislative powers, subject only to the revision of Congress, in all matters pertaining to Porto Rico, it seemed proper that there should be created a local code commission, which would sit in the island and work in harmony with the local legislature, making its report to the governor of Porto Rico for submission to the next legislative assembly. Accordingly, an act having that purpose in view was passed giving the power of appointment to the insular executive.

On March 28, Messrs. Rowe, Hernandez Lopez, and Keedy were appointed as members of this commission. The two first are members of the former commission appointed by the President under the act of Congress. The latter is a member of the Porto Rican bar.

This second commission executed its work promptly, and presented its completed work to the third session of the legislature in January, 1902. Probably the most important legislation of the session was the enactment of the new codes. These three codes mark a new epoch, and it is most important to those interested in the island that the systems of penal laws formerly in use will disappear after July 1st and the criminal jurisprudence of Porto Rico will be modeled after that of the code States of the United States. The general classification of crimes will be the same as in the United States, and the owner of property may feel that protection such as is given here will be given him in Porto Rico.

The corporation law which was passed is modeled upon that of New Jersey, which is understood to be liberal toward corporate organizations. A law was passed authorizing injunctions based upon the usual statutes pertaining to injunctions in the United States, and conforming to the general practice. So that considered as a whole the general action of the legislature of the island may be considered enlightened and conservative, and so long as the present form of government is maintained is likely to be entirely safe and prudent.

FRANCHISES AND CONCESSIONS

As soon as the executive council had organized its mode of procedure in the granting of franchises and concessions, applications began to be placed on file. Among the first was one for a railway, which was filed on September 11. From that date up to March 22, a little over six months, fifty-three applications were presented. These covered a great variety of subjects, such as railways, wharves, water rights, telephones, tramways, telegraphs, ferries and automobile lines. As yet, very few have been granted.

The organic act placed the power of granting franchises in the executive council with the approval of the governor, reserving to Congress the power to annul or modify them. The act of May 1, 1900, required all franchises and concessions granted for railways, tramways, telegraphs and telephones to be approved by the President, and that all franchises whatever should be subject to alteration, amendment, or repeal, and placed other less important restrictions upon the power of the insular authorities in this connection.

The executive council established rules and regulations on this subject, requiring notice to be given of the filing of an application by publication in certain newspapers, and that a day should be fixed for the filing of protests, and that a public hearing should be had in all cases, and argument before the council when deemed necessary. It has also been the policy of the council to require applicants to alter or amend all applications, or to grant the franchises on such terms and conditions as seemed to be just and equitable. In water, railway, and wharf franchises, royalties, payable to the public treasury, have been imposed, sufficient to protect the public welfare, but not so heavy as to discourage capital.

Very few objections indeed have been made by investors to the requirements of the laws, or to the regulations established by the council. It is believed that ere long many of the natural resources of the island will be utilized by foreign capital interested in their development.

CIVIL SERVICE

As yet there is no civil service operating in the island, but the fitness of civil-service rules is well recognized and the department heads have followed the principle of appointing none but those believed to be best qualified and have retained such only in the public service. In the secretary's office, however, a start has been made by way of competitive examinations for clerkships, and a scale of marking has been adopted which insures the selection of the most capable applicants. It is very probable that the department system will be agreed upon and legislation upon the subject had before another year.

THE COURTS

The judiciary of the island was found at the beginning of the American occupation to be the same as in other dependencies of Spain. The highest court was the territorial audiencia, sitting at San Juan, from which there was an appeal to the Supreme Court in Madrid, Spain. This audiencia was composed of six judges and had original criminal jurisdiction; also appellate jurisdiction in civil cases from the courts of first instance.

There were also audiencias at Ponce and Mayaguez, one at each place, having criminal jurisdiction only, and each composed of three judges. The next in rank and importance were the courts of first instance and instruction, of which there were twelve, each having a separate district. These courts had each only one judge and exercised original jurisdiction in civil cases involving $200 or over, and appellate jurisdiction from inferior courts. In criminal matters they discharged the usual duties of an examining court.

Each municipality had also a municipal judge, sixty-nine in the island. These municipal courts had civil jurisdiction of all matters involving less than $200 and of arbitration, and in criminal misdemeanor cases where the punishment was a fine of not more than $65 or imprisonment not longer than thirty days.

In certain criminal cases they also acted as examining courts, and had a limited probate jurisdiction, and other duties not necessary to mention. Each of these courts of all classes had a secretary and a staff of clerks, a prosecuting attorney and his assistants, constables and bailiffs in abundance. All except those of the municipality were paid by regular salaries, which were on a liberal scale; the officers of the municipal courts were paid by fees charged to litigants. There were also in the municipal courts substitute judges, who discharged the duties of their principals when the latter were disqualified by absence or sickness. All these officers were appointed by the Governor-General of the island. The business in every court was retarded by many delays and formalities, and there did not seem to be any such thing as a speedy and impartial administration of justice in either civil or criminal cases.

Under the military administration the courts were reorganized by General Orders No. 118, issued on August 16, 1899. The courts of the first instance and instruction were abolished, and their duties distributed to other tribunals. The municipal courts were retained, with two associate judges added, and upon them were imposed the additional duty of examinations in all criminal cases, their original criminal jurisdiction being somewhat reduced and their civil jurisdiction being raised to $400.

Five district courts were established, of three judges each, having civil and criminal jurisdiction, and appellate jurisdiction from inferior courts, and they were required to hold public oral trials under forms of procedure established in the orders. The audiencias were abolished and their functions conferred on the district courts and the Supreme Court. The highest court in the island was called "the Supreme Court of Justice," with a fixed residence at San Juan. It was composed of a chief justice and four associate justices, having appellate jurisdiction in all civil and criminal cases. The alcaldes in each municipality were given the power of police judges.

By General Orders No. 88, issued on June 27, 1899, the military commander established a United States provisional court, consisting of three judges. These were an American lawyer and two army officers. This court had a clerk, a marshal, and other officers usual in the corresponding courts on the continent. It was clothed with the jurisdiction of the circuit and district courts of the United States, and had such powers somewhat enlarged to meet local conditions.

Thus the courts of Porto Rico, under the military government, consisted of: First, one Supreme Court of five justices; second, five district courts of three judges each; third, sixty-nine municipal courts of three judges each; fourth, sixty-nine police courts, consisting of the alcaldes in each municipality, and fifth, the United States provisional court with three judges. Such were the tribunals administering justice on the island on May 1, 1900, when the organic act took effect.

By the act of Congress establishing a civil government for Porto Rico there was established a district court of the United States for Porto Rico, which was granted, "in addition to the ordinary jurisdiction of the district courts of the United States, jurisdiction in all cases cognizant in the circuit courts of the United States."

This court was also constituted the successor of the United States provisional court heretofore mentioned, and all records in said court were required to be delivered to the new court thus created, and the provisional court was discontinued. This court so established was duly organised on August 8, 1900, and is proceeding with its business in an orderly, proper and successful manner. By an act of Congress amending the organic law of Porto Rico the jurisdiction of this court was enlarged in civil matters to reach all cases involving $1000 or more. This will more than double the business in this court.

By the organic act the judicial power is vested in the courts which were then established and in operation, all of which courts were thereby continued, and their selection, jurisdiction and form of procedure was allowed to remain as it was at that time with the following exceptions: The justices of the Supreme Court and the marshal are appointed by the President, and the judges of the district court are appointed by the governor, and all other officials and attaches of the other courts are chosen in accordance with directions of the assembly. Power to legislate fully in regard to the courts was also conferred on the legislative assembly. That body had made only one slight change in the Supreme Court, providing that three members shall be a quorum. Besides, it has passed an act creating a police court in each municipality in the island and conferring on them the powers formerly exercised by the alcaldes acting as police judges, and enlarging their jurisdiction in some particulars. Thus the judiciary system of the island stands to-day. It is probably best to proceed slowly with changes or even reforms in such important matters as the administration of justice; but it is probable that the next session of the assembly will make some reforms in conformity with the new conditions.

The Attorney-General is most intimately connected with the judiciary, being the State's counsel in all cases pending in the Supreme Court of the island, and having a controlling oversight of all the district attorneys (fiscales) in the various districts of the island. He is also connected with the Department of Justice of the United States, being required by the organic act to report to the Attorney-General of the United States, through the governor, when required. He is also the legal adviser of the governor and of the other members of the executive council. Prosecutions against offending officials are conducted under the direct supervision of the chief law officer of the island, and there have been no less than one hundred and twenty-one accusations of this kind and many convictions, though the majority of the accused were acquitted on trial. In the entire judicial department of the island there are employed 378 persons, of whom only five are Americans.

CHAPTER VII

CHANCES FOR THE COLONIST

THE FOREGOING pages cover the present condition of affairs in Porto Rico, and afford an opportunity for any one interested to form his own opinion as to the future prospects in the island. That the present form of government is well adapted to the people is well established, and there is every reason to anticipate a continued healthy growth and prosperity for the island. While gold will not be had for the picking, still as a new and comparatively undeveloped country there is more "elbow room" than can be had in older states or territories, and with all the wealth of resource so bounteously and fully given by nature, there is a great opportunity for returns for the thrift and industry of the farmer. The climate is not unhealthy, nor are the conditions of living at all disadvantageous.

Capitalists can be assured of protection to their property and investments, guaranteed in the form of government, in the tax laws, and in the reorganization of the courts, and capital is pretty sure to take care of itself.

The young man intending to go to Porto Rico will do well to study the situation carefully. He must reflect that the island is very thickly settled, having nearly a million people in a territory of thirty-six hundred square miles.

It is true that the professions of law and medicine are not overcrowded, and it is also a fact that there are comparatively few civil engineers, architects and electrical engineers. At the same time no young man, whatever his accomplishments, can hope to immediately succeed in any business who does not understand fairly well the Spanish language.

Before the American occupation there was hardly one person in ten thousand who spoke English. Many of the younger people are learning it rapidly, and some of the older ones are studying it hard, but Spanish is and will be for years to come the language of the people in this group of West Indian Islands, and naturally a knowledge of the language is absolutely essential if one is to attempt to do business with the people.

There are many very skillful physicians in Porto Rico; men who have been educated in the United States and in Europe, and it is quite natural that the people would prefer as their physician one of their own kindred or friends. The people are very keen, and men of small ability would very quickly find their level.

The number of lawyers in Porto Rico seems small in comparison to that of the thickly populated districts of the United States, but there is not so much law business, and a great deal of the business which is transacted by lawyers in the United States, such as conveyancing, and the preparation of legal documents, is generally done by notaries, who do not call themselves lawyers, nor undertake to practice in the courts. There is also another class of professional men called procuradores (attorneys) who prepare cases only for the lawyers to file in court, and try before judges, when all the preliminaries have been transacted. Besides, a great number of young men, natives of Porto Rico, have gone to the United States for the purpose of studying law, and some are beginning to return with diplomas from American colleges and universities, to practice their profession in the island.

The young American lawyer going to Porto Rico would have to contend not only with the old established native lawyers, who speak the language, and have an excellent knowledge of law, but also with the young men who not only know the language, but have completed their education by passing through an American college and coming out with a degree, have returned to their native land as American lawyers.

An American lawyer to succeed in Porto Rico, besides speaking English and Spanish fluently, must have a knowledge of the civil law, that is the law of Spain, as derived from the Romans, and of the codes which have been in force in Porto Rico, as well as of American jurisprudence. So really the requirements of successful competition in the profession are greater than are ordinarily demanded in the cities and towns of the United States.

As American capital gradually is attracted to the island for various purposes in developing the resources, no doubt American engineers will be in demand, and will command fair remuneration for their services.

There is not as yet much of an opening for architects. Little building is going on in the island, and the climate does not require houses built on the American plan, and the architecture is simple and adjusted to the needs of a people living in the tropics.

Indeed the prospect to the proposed colonist is not such as to induce him to leave comparative comfort for the uncertainties and inconveniences he would certainly meet in Porto Rico. Improved agriculture offers the widest field, and the best employment for American energy and American capital. The peculiarities of the people and the distinct individuality of the island will for some time be a decided disadvantage, but with the introduction of American machinery and improvements, great changes will be effected, and with the thrift and industry which follows the Anglo-Saxon, in time this very individuality will disappear, and American capital, energy, and intelligence will find a wide and favorable field for their successful exercise.

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